1909
1
2465
M B

THE BOSTON MEDICAL AND SURGICAL JOURNAL

JOHNS HOPKINS HOSPITAL
DEC 16 1905
LIBRARY

GEORGE B. SHATTUCK, M.D., EDITOR
E. W. TAYLOR, M.D., ASSISTANT EDITOR

VOLUME CXLII

JANUARY—JUNE, 1900

BOSTON
DAMRELL AND UPHAM
283 WASHINGTON STREET
1900

R11
.B74

5173 Hosp.

PRESS OF S. J. PARKHILL & COMPANY
226 FRANKLIN STREET
BOSTON

Dec-14-E-36

JOHNS HOPKINS HOSPITAL
DEC 16 1925
LIBRARY

CONTRIBUTORS TO VOLUME CXLII.

ABBOTT, S. W., M.D.
ATWOOD, C. A., M.D.
AUSTIN, A. E., A.M., M.D.
BALCH, F. G., M.D.
BALDWIN, L. G., M.D.
BALDWIN, H. C., M.D.
BALDWIN, E. R., M.D.
BARTOL, J. W., M.D.
BARTON, W. E.
BERNAYS, A. C., A.M., M.D., M.R.C.S.
BLAKE, C. J., M.D.
BLODGETT, A. N., M.D.
BOLAND, E. S., M.D.
BOWDITCH H. P., M.D., LL.D., D.Sc.
BOWDITCH, V. Y., M.D.
BOWEN, JOHN T., M.D.
BRACKETT, E. G., M.D.
BRADFORD, E. H., M.D.
BREWSTER, G. W. W., M.D.
BRYANT, J. D., M.D.
BURR, C. R., M.D., Ph.B.
BURRAGE, W. L., M.D.
BURRELL, H. L., M.D.
CABOT, A. T., M.D.
CABOT, R. C., M.D.
CANNON, W. B., A.M.
CHANNING, WALTER, M.D.
CHASE, R. F., M.D.
CLARK, J. P., M.D.
COBB, C. M., M.D.
COBB, FARRAR, M.D.
COBB, FREDERIC C., M.D.
COLEY, WM. B., M.D.
COTTON, F. J., M.D.
CORDELL, E. F., M.D.
COUES, W. P., M.D.
COUNCILMAN, WM. T., A.M., M.D.
COURTNEY, J. W., M.D.
CROTHERS, T. D., M.D.
CUMMINGS, A. R., M.D.
CURTIS, B. F., M.D.
DALY, J. R. L., M.D.,
DAVENPORT, F. H., M.D.
DOCK, GEO., A.M., M.D.
DOOLITTLE, W. F., M.D.
DUDLEY, E. C., M.D.
DUNHAM, E. K., M.D.
DWIGHT, THOMAS, M.D., LL.D.
EDES, ROBERT T., M.D.
EGAN, P. R., M.D.
ELIOT, C. W., LL.D.
ELLIOT, J. W., M.D.
EINHORN, MAX, M.D.
ENGLEMANN, GEO. J., M.D.
ERNST, H. C., A.M., M.D.
FITZ, G. W., M.D.
FOLSOM, C. F., M.D.
FULTON, F. T., M.D.
GARCEAU, EDGAR, M.D.
GIBNEY, V. P., M.D.
GOFFE, J. R., M.D.
GREEN, C. M., M.D.
GREENE, E. M., M.D.
HAM, J. R., M.D.
HARE, C. H., M.D.
HARRINGTON, F. B., M.D.
HEWES, HENRY F., M.D.
HIGGINS, F. A., M.D.
HILL, G. S., M.D.
HOLYOKE, F., M.D.
HOMANS, JOHN, M.D.
HOUGH, G. De N., M.D.
HUBBARD, J. C., M.D.
JACKSON, HENRY, M.D.
JACKSON, J. M., M.D.
JACOBI, A., M.D., LL.D.
JANEWAY, E. G., M.D.
JELLY, A. C., M.D.
JOHNSON, F. W., M.D.
JOHNSTON, GEO. BEN, M.D.
KAAN, GEO. W., M.D.
KEEN, W. W., M.D., LL.D.
KNAPP, PHILIP COOMBS, A.M., M.D.
KINGMAN, R. A., M.D.
KNIGHT, H. S., M.D.
LA GARDE, MAJ. L. A., M.D.
LEFFINGWELL, ALBERT, M.D.
LINDSTRÖM, ALFRED H., M.D.
LORD, S. A., M.D.
LOTHROP, H. A., M.D.
LOVETT, R. W., M.D.
LUND, F. B., M.D.

LYON, F. D., M.D.
MACDOUGALL, R., PH.D.
MANLEY, THOS. H., M.D.
MEAD, J. A., M.D.
MORSE, JOHN LOVETT, A.M., M.D.
MUMFORD, J. G., M.D.
MUNRO, JOHN C., M.D.
MUNSON, E. L., M.A., M.D.
NELSON, C. D., M.D.
NOBLE, CHAS. P., M.D.
OGDEN, J. B., M.D.
OSLER, WM., M.D.
OTIS, E. O., M.D.
PAUL, W. E., M.D.
PAIGE, J. D., M.D.
PEARCE, F. S., M.D.
PECKHAM, F. E., M.D.
POMEROY, E. H., M.D.
PRATT, J. H., M.D.
PRINCE, MORTON, M.D.
PUTNAM, J. J., M.D.
RANDALL, G. M., M.D.
REYNOLDS, EDWARD, M.D.
RICHARDSON, MAURICE H., M.D.
RODMAN, W. L., M.D.
ROSSE, I. C., M.D., F.R.C.S.
SCANNELL, D. D., A.B.
SCOFIELD, W. W., M.D.
SCUDDER, C. L., M.D.
SEARS, GEO. G., M.D.
SHATTUCK, GEO. B., M.D.
SHATTUCK, F. C., M.D.
SKENE, A. J. C., M.D.
SMITH, THEOBALD, M.D.
SMITH, W. H., M.D.
SMITHWICK, M. P., M.D.
STINSON, J. C., M.D., C.M.
STONE, A. K., M.D.
STONE, J. S., M.D.
STORER, MALCOLM, M.D.
SUGHRUE, M. J., ESQ.
SUMNER, A. F., M.D.
TAYLOR, E. W., M.D.
TENNEY, BENJ., M.D.
THAYER, A. S., M.D.
THORNDIKE, PAUL, M.D.
TOWNSEND, C. W., M.D.
TWOMBLY, E. L., M.D.
VICKERY, H. F., M.D.
VIETOR, AGNES C., M.D.
WARD, GEO. O., M.D.
WARD, ROBT. DEC.
WARREN, J. C., M.D.
WALTON, G. L., M.D.
WATSON, F. S., M.D.
WEIR, ROBT. F., M.D.
WELCH, WM. H., M.D.
WENTWORTH, A. H., M.D.
WHITE, J. WM., M.D.
WHITRIDGE, A. H., M.D.
WILLIAMS, FRANCIS H., M.D.
WILLIAMS, HUGH, M.D.
WINN, C. H., M.D.
WINTERS, JOSEPH E., M.D.
WITHINGTON, CHAS. F., M.D.
WOOD, H. C., M.D., LL.D.
WORCESTER, ALFRED, M.D.
WRIGHT, JAMES H., M.D.

INDEX TO VOLUME CXLII.

Abbott. Report of a few cases of insanity treated by the cold pack, 164, 197.

Abbott, A. C. Relative infrequency of acute transmissible diseases during the first year of childhood, with a discussion of the probable reasons for the same, 543.

Abbott, S. W. Sixteen years' experience in food and drug inspection, 82; progress in public hygiene, 330, 356, 380, 432.

Abdomen. On the advisability of a more or less general exploration of the abdomen when it has been opened for an operation, Homans, J., 189; remarks on the influence of technique upon the results of closure of wounds of the abdominal wall, Noble, C. P., 237, 256; a case of acute general peritonitis, operation, recovery, Mumford, J. G., 301; gunshot wound of the abdomen, with multiple wounds of the intestine, Lothrop, H. A., 405, 413.

Actinomycosis. The organism and lesions of actinomycosis, Wright, J. H., 545.

Addison's Disease. Case of Addison's disease under treatment with suprarenal extract, Johnston, W. W., 549.

Africa. The wounded in South Africa, 95; military surgery in South Africa, 118; the war in South Africa, Treves, F., 151; expense of medical consultants in South Africa, 343.

Alcohol. The controversy as to the nutritive value of alcohol, 258; alcohol in the tropics, 672.

Allis, O. H. Dislocations of the hip, demonstration on the cadaver illustrative of their mechanism, 606.

Allis's method of reducing a dislocation of the hip, Warren, J. C., 40.

Amputation. A case of Chopart's amputation, with tendon implantation and tenotomy, Mumford, J. G., 301.

Anders, J. M. The diagnostic value of tuberculin in tuberculosis, 573.

Anemia. Anemia and other diseases in Puerto Rico, 393; some of the conclusions arrived at after a study of 110 cases of pernicious anemia, Cabot, R. C., 546; a report of cases of pernicious anemia, with a special reference to the blood findings, Billings, F., 546; clinical notes on cases of pernicious anemia, Henry, F. P., 546.

Angiotribe. The use of the angiotribe, Goffe, J. R., 373.

Animals. Adaptation of pathogenic bacteria to different species of animals, Smith, T., 473.

Anopheles and malaria, Colli, 261.

Appendicitis. Appendicitis in a hernial sac, Tenney, B., 4, 12; the attitude of the physician and surgeon to appendicular symptoms complicating typhoid fever, Hare, H. A., 556; observations on appendicitis, Van Giesen, I., 550.

Argentina. Heat in Argentina, 394.

Army. The best diet for the tropics, the army ration, 47; report of the Surgeon-General of the Army, 118; acting assistant surgeons in the Philippines, 178; contract surgeons, 416; the ideal ration for an army in the tropics, Munson, E. L., 463, 489, 501, 534.

Athens. Hydrophobia in Athens, 314.

Atwood, C. A. A pistol wound of the abdomen, 39.

Austin, A. E. A method of determining the digestive power of gastric juice as well as the absorptive power of the stomach, 246.

Bacillus. Varieties of the diphtheria bacillus, Westbrook, F. F., 518; clinical report of cases of infection due to the bacillus aërogenes capsulatus of Welch, Thorndike, P., 592; report of cases in which the bacillus aërogenes capsulatus was found, Pratt, J. H., and Fulton, F. T., 599.

Bacteria. Adaptation of pathogenic bacteria to different species of animals, Smith, T., 473; bacteriotherapeutics, with especial reference to tuberculosis, Baldwin, E. R., 477; the relation of bacteriology to medicine, Cabot, R. C., 479; bacteria and the buried animal body, 578.

Baldwin, E. R. Bacteriotherapeutics, with especial reference to tuberculosis, 477.

Baldwin, H. C. The work of the trustees of the Boston Insane Hospital and their plans for its future development, 379, 383.

Baldwin, L. G. Malignancy in the female genito-urinary system, 66.

Bartlett, E. A Rhode Island philosopher, Osler, W., 49, 77.

Barton, J. M. Fractures of the patella, 698.

Beach, H. H. A. Anatomical specimens, 11; intestinal obstruction, 110.

Beck, C. Surgical errors in skiagraphy, 686.

Bell, A. N. Stamina, the special benefit of fats of one kind or another as a nece sary article of diet to fortify the system against tubercle bacilli, 574.

Bequests. The dispersion of bequests, 94.

Bernays, A. C. On ischemic paralysis and contracture of muscles, 539.

Bevan, A. D. Unreduced and irreducible dislocations, 698.

Bibliography. Ashby, H., the diseases of children, medical and surgical, 701; Barker, L. F., the nervous system and its constituent neurones, 68; Bartholow, R., a practical treatise on materia medica and therapeutics, 93; Bradford, E. H., and Lovett, R. W., treatise on orthopedic surgery, 361; Brown, H., ringworm and some other scalp affections, their cause and cure, 521; Butler, G. P., a text-book of materia medica, therapeutics and pharmacology, 240; Cattell, H. W., international clinics, 551; Christison, J. S., brain in relation to mind, 257; Church, A., and Peterson, F., nervous and mental diseases, 116; Collins, H. D., and Rockwell, W. H., Collins's and Rockwell's physiology, 281; Corwin, A. M., essentials of physical diagnosis of the thorax, 281; Crockett, M. A., Crockett's gynecology, 236; cyclopedia of the diseases of children, medical and surgical, 69; Deaver, J. B., surgical anatomy: a treatise on human anatomy in its application to the practice of medicine and surgery, 117; Dudley, E. C., diseases of women, 147; Fitzgerald, J., pyorrhea alveolaris and its relation to general medicine, 146; Foxwell, A., the causation of functional heart murmurs, 436; Fullerton, A. M., surgical nursing, 281; Gillespie, A. L., a manual of modern gastric methods, chemical, physical and therapeutical, 338; Gould, G. M., the American year-book of medicine and surgery, 200; a pocket medical dictionary, 281; Gowers, W. R., a manual of diseases of the nervous system, 17; Gruenwald, L., atlas and abstract of the diseases of the larynx, 309; Haig, A., diet and food, 310; Hall, T. W., and Menzies, J. A., golden rules of physiology, 281; Hall, W. S., a text-book of physiology, 521; Harrison, E., home nursing, 362; Harrison, R., selected papers on stone, prostate and other urinary disorders, 93; Harvard University, annual report, 201; Head, G. E., and Andrews, A. H., the year-book of the nose, throat and ear, 338; Hewer, L., our baby, 701; Holland, J. W., the urine and the clinical chemistry of the gastric contents, the common poisons and milk, 310; Hughes, D. E., a compend of the practice of medicine, 362; Hyde, J. N., and Montgomery, F. H., a practical treatise on diseases of the skin for the use of students and practitioners, 551; international medical annual and practitioner's index, 438; Keen, W. W., and White, J. W., an American text-book of surgery for practitioners and students, 280; Keyes, E. L., and Chetwood, C. H., venereal diseases, 522; Knopf, S. A., prophylaxis and treatment of pulmonary tuberculosis, 437; Kyle, D. B., a text-book of the diseases of the nose and throat, 360; Lewis, T. B., a text-book of mental diseases, with special reference to the pathological aspects of insanity, 70; Lilienthal, H., imperative surgery for the general practitioner, the specialist and the recent graduate, 280; Longeway, M. L., the trained nurses' directory, 70; Lucas, J. J. S., Nordrach at home, or hygienic treatment of consumption, 310; Maisbery, L. E., practice of medicine, 362; Massachusetts Board of Insanity, first report, 551; McKendrick, J. G., Herman Ludwig Ferdinand von Helmholtz, 229; Mills, C. K., the nervous system and its diseases, 17; Monro, T. K., Raynaud's disease (local syncope, local asphyxia, symmetrical gangrene), its history, causes, symptoms, morbid relations, pathology and treatment, 94; Moullin, C. M., epididymectomy of the prostate, its true and radical cure, 92; Netter, la peste et son microbe, 414; Park, W. H., bacteriology in medicine and surgery, 229; Pedley, R. D., the hygiene of the mouth, 117; Penrose, C. B., a text-book of diseases of women, 281; Phelps, E. S., loveliness, 172; Purrington, W. A., Christian Science, 338; Quarantine and national report of the Board of Health of the Province of Quebec, 361; Roberts, J. B., notes on the modern treatment of fractures, 281; Schweinitz, G. E. de, an American text-book of the diseases of the eye, ear, nose and throat, 92; Stedman, T. L., twentieth century practice, 171, 437; Talbot, E. S., interstitial gingivitis, or so-called pyorrhœa alveolaris, 171; Thorington, J., refraction and how to refract, 236; Truax, C., the mechanics of surgery, 280; Valentine, F. C., the irrigation treatment of gonorrhea, local complications and sequelæ, 609; Voswinkel, B. M., surgical nursing, 93; Warren, J. C., and Gould, A. P., the international text-book of surgery, 257; Watson, C., encyclopedia medica, 172; Watson, J. K., a hand-book for nurses, 575; Wharton, H. R., minor surgery and bandaging, 94; Ziegler, A., general pathology, 171.

Billings, F. A report of cases of pernicious anemia, with a special reference to the blood findings, 546.

Biography. Apostoli, 643; Arrowsmith, J. E., 76; Bagg, M. M., 528; Bailey, T. H., 316; Bartlett, E., 49, 77; Bartlett, G. P., 365; Beebe, A. A., 316; Beebe, C. E., 284; Bill, H. P., 288; Billings, A. J., 179; Birch-Hirschfeld, 441; Bird, J. S., 396; Bronson, J. R., 528; Carsen, W., 179; Clark, R., 469; Collins, C. S., 580; Conklin, G. H., 420; Cook, J. S., 76; Cooper, J., 368; Crane, J. J., 444; Cresmer, J. M., 236; Edwards, A. M., 643; Ellis, G. V., 643; Fitzsimmons, T. D., 179; Forman, S. R., 230; French, G. M., 236; Garrison, S. O., 444; Gehring, F. H., 76; Gibier, P., 645; Graves, F. W., 288; Gray, L. C., 527; Hall, M. W., 76; Hammond, W. A., 41; Harrington, J. C., 444; Harris, R., 344; Hassie, T. B., 444; Hastings, W. H. H., 208, 234, 314; Helmholtz, H. L. F. von, 229; Hoffman, J. B., 344; Holmes, E. L., 208; Hopkins, W., 30; House, W. S., 124; Howard, B. D., 701; Howard, W. F., 704; Hubbard, O. P., 288; Kimball, F. D., 420; Kingsley, C., 48; Leonard, E. K., 674; Lindström, A. H.,

536; MacDonald, J., 580; Maclagan, A. D., 468; Malone, S., 20; Marsh, A., 154; Martin, E. F., 236; Mersereau, C. H., 528; Metcalf, E. G., 154; Morse, L. R., 580; Mivart, G., 364; O'Callaghan, T., 24; O'Hearn, W. H., 614; Otis, F. N., 579; Paget, J., 22, 24, 43; Peck, A. E., 288; Pennington, S. H., 316; Perkins, E. A., 236; Pettingill, F. H., 179; Pierce, G. C., 580; Pierson, W., 676; Plunkett, F. C., 153; Priestly, W. O., 417; Prince, C., 288; Richardson, A. P., 154; Rightmore, W. V., 179; Shakespeare, E. O., 614; Shaw, J. C., 124; Stackpole, P. A., 368; Stewart, T. G., 154; Stickler, J. W., Jr., 206; Storrs, M., 674; Vondy, J. H., 396; Voorhees, C. H., 556; Wamsley, W. E., 264; Warren, G. W., 528; Whistler, W. M., 316; Woodbridge, L. D., 46; William, C. C., 124; Winston, G. S., 24.

Blake, C. J. The sociological status of the physician, 482.

Blake, J. D. Tetanus treated with antitetanic serum, 690.

Blanchard, W. Rapid osteoclasis for the correction of rhachitic deformities of the legs, 664.

Blodgett, A. N. Lithiasis preputialis, 675.

Blood. The practical value of the white blood count in surgical cases, Hubbard, J. C., 409, 412; examination of the blood, its value to the general practitioner, Fussell, M. H., 638.

Boland, E. S. Idiopathic pneumohematothorax with recovery after aspiration, 321, 333.

Bonney, S. G. Some phases of the tuberculosis problem in Colorado, 572.

Bowditch, H. P. The medical school of the future, 445; Dr. Bowditch's address, 468.

Bowditch, V. Y. The Massachusetts State Hospital for Consumptives at Rutland; its purposes and the work accomplished during the first year, 127, 142.

Bowen, J. T. Report on dermatology, 193.

Bradford, E. H. Results of treatment of congenital dislocation of the hip, 630.

Bradford, E. H., and Brackett, E. G. Report on orthopedic surgery, 223.

Bradycardia, with intermittent albuminuria, Whitridge, A. H., 329.

Brewster, G. W. W. A case of intestinal obstruction from a hair-ball, 395.

Bridge, N. Some observations on human temperature in disease, 550.

Brothers, A. Some points in the diagnosis and management of cystitis in the female, 357.

Bryant, J. D. Malignant disease, 65.

Bullet. The "humane" bullet, 364.

Burns, W. B. Malarial hemoglobinuria, 668.

Burr. C. B. Intestinal digestion and its relation to pulmonary disease, 101.

Burr, W. The relations of chorea and rheumatism, 669.

Burrage, W. L. Abstract of paper on "further experience with the operative treatment of anteflexion," 241, 255; abdominal myomectomy, removal of eleven subperitoneal nodules and right ovary weighing together one and one-half pounds, 349; the conservative operative treatment of fibroids, report of three cases, 349, 358; vaginal myomectomy, removal of fibroid nodule three centimetres (one and one-fourth inches) by one and one-half centimetres (seven-eighths inch), of subperitoneal evolution from the front wall of the uterus by anterior colpotomy, 349; morcellation of submucous nodule at fundus and polyp with pedicle springing from fundus, 350.

Burrell, H. L. A personal experience in the teaching of surgery, 565, 568.

Cabot, A. T. Adhesions of the stomach, 606; realism in medicine, 615, 647.

Cabot, R. C. Some points suggested by the clinical study in one hundred and eighty-six cases of valvular heart disease, 106, 111; a second case of chronic cyanosis without assignable cause, 275; splenic pseudoleukemia, historical sketch, 421, 435; double extrauterine pregnancy, 428; the relation of bacteriology to medicine, 479; some of the conclusions arrived at after a study of 110 cases of pernicious anemia, 546.

Camac, C. N. B. Hospital and ward clinical laboratories, 637.

Cannon, W. B. The case method of teaching systematic medicine, 31; the case system in medicine, 563, 568.

Cary, C. Dogenerated echinococcus cyst of the pleura, 550.

Case method of teaching systematic medicine, Cannon, W. B., 31; the case method of teaching medicine, 42.

Cats. Sympathy for cats, 90.

Cells. Anopheles and malaria, 261.

Centenarian. A centenarian, Cummings, A. R., 207.

Chase, R. F. Bradycardia, with a report of a case, 130, 140.

Children. Three cases of angioneurotic edema in infancy, Morse, J. L., 10; the proper seating of school children, 339; hair-eating children and convulsions, Lyon, F. D., 345; measurements of Boston school children, 526; relative infrequency of acute transmissible diseases during the first year of childhood, with a discussion of the probable reasons for the same, Abbott, A. C., 543; recurrent vomiting in children, Griffiths, J. R. C., 544; heart lesions in infancy, Jacobi, A., 571; exercises suitable for children suffering from heart disease, Taylor, J. M., 574.

Cholecystostomy. Cases of cholecystostomy, Garceau, E., 104.

Christian Science a menace to the public weal, 283, 285.

Circulatory System. Epistaxis, Cobb, F. C., 2, 12; the value of x-ray examinations in the less frequent diseases of the chest illustrated by their use in those cases where aneurism is present or suspected, Williams, F. H., 54, 85; some points suggested by the clinical study in one hundred and eighty-six cases of valvular heart disease, Cabot, R. C., 106, 111; bradycardia, with report of a case, Chase, R. F., 130; the clinical value of Oliver's hemocytometer, Scannell, D. D., 160; a second case of cyanosis without assignable cause, Cabot, R. C., 275; report on progress in thoracic diseases, Sears, G. G., and Bartol, J. W., 276, 302; bradycardia with intermittent albuminuria, Whitridge, A. H., 329; the practical value of the white blood count in surgical cases, Hubbard, J. C., 409, 412; cyanosis from congenital cardiac disease, Townsend, C. W., 436; venous thrombosis as a complication of cardiac disease, Welch, W. H., 549; aneurism of the aorta with rupture into the superior vena cava, recognized during life, Stengel, A., 550; minor forms of cardiac dilatation, Robinson, B., 550; heart lesions in infancy, Jacobi, A., 571; the blood changes in high altitudes, Solly, S. E., 574; a case of mural endocarditis, Williams, H., 574; exercises suitable for children suffering from heart disease, Taylor, J. M., 574; aneurism of heart, thrombosis of left coronary artery, Daland, J., 575; examination of the blood, its value to the general practitioner, Fussell, M. H., 638; rheumatism and the prevention, of heart complications, Walsh, J. J., 669; heart in rheumatism, Rochester, Del., 669; a case of malignant endocarditis with recovery, Davis, N. S. Jr., 670.

Clark, J. P. Anatomical specimens, 435.

Cleveland. Ruptured ovarian cyst, 337.

Cobb, C. M. A new nasal scissors for the removal of the lower turbinate, 603.

Cobb, F. C. Epistaxis, 2, 12.

Coley, W. B. The treatment of inoperable malignant tumors, 68.

Consultants. Expense of medical consultants in South Africa, 343.

Consultation. The physician and the surgical consultant, 70.

Cotton, F. J. Separation of the epiphysis of the olecranon, 692.

Coues, W. P. A case of ptomaine poisoning, 90.

Councilman, W. T. The course in pathology at the Harvard Medical School, 558, 567.

Courtney, J. W. A case of multiple cerebral hemorrhages from chronic lead poisoning, with necropsy, 136, 142; on distortion of the spine, with the report of two cases of diplegia brachialis due to this cause, 345.

Craig, C. F. Some typical cases of estivo-autumnal and tertian malarial fevers with a study of the parasites observed in the blood, 668.

Craig Colony for Epileptics, 311.

Crandon, L. R. G. A self-closing stopper for an ether bottle, 297.

Crook *vs.* **Horrocks,** 396.

Crothers, T. D. An excursion to the Paris exhibition, 263.

Cummings, A. R. A centenarian, 207.

Curtin, K. C. The phlebitis of advanced phthisis, with report of cases of phthisis following abscesses of the hand, 573.

Curtis, B. F. Gastric dilatation, gastroptosis, 605.

Cutaneous System. The discovery of scabies, 122; report on dermatology, Bowen, J. T., 193; cases of rash after enemata, 203.

Cyanosis. A second case of cyanosis without assignable cause, Cabot, R. C., 275.

Daland, J. Aneurism of heart, thrombosis of left coronary artery, 575.

Daly, J. R. L. A clinical study of heroin, 190.

Dane, J. A new back brace for Pott's disease, 630.

Davis, B. B. Treatment of injuries of the ureter, 666.

Davis, G. G. Brace for lateral curvature of the spine, 664; an operation for ununited intracapsular fracture of the hip, 664.

Davis, N. S., Jr. A case of malignant endocarditis with recovery, 670.

Death certificates in rural districts, 613.

Deaver, J. B. Appendiceal fistula, 636.

DeBlois. Obesity, 333.

Denison, C. Educational and legislative control of tuberculosis, 572.

Dennis, F. S. Stricture of the esophagus following typhoid fever, gastrostomy, 606.

Diabetes. Notes on diabetes: (1) on the occasional low specific gravity of diabetic saccharine urine; (2) on casts in the urine during diabetic coma, Herrick, J. B., 543.

Digestive System. Appendicitis in a hernial sac, Tenney, B., 4, 12; a simple method for the quantitative analysis of the gastric contents for use in clinical work, Hewes, H. F., 9; a case of perforating gastric ulcer, operation, recovery, with remarks on the surgery of gastric ulcer, Lund, F. B., 25, 41; intestinal digestion, and its relation to pulmonary disease, Burr, C. B., 101; cases of cholecystotomy, Garceau, E., 104; intestinal obstruction, Beach, H. H. A., 110; a brief note on some of those grave abdominal lesions which often defy diagnosis, Manley, T. H., 135; diffuse peritonitis from acute appendicitis in a girl aged thirteen years, operation, recovery, Jenson, J. C., 163; perinephritic abscess involving the appendix, Willson, H., 222; the gastro-intestinal tract in tuberculous diseases, Pearce, *F.* S., 242; a method of determining the digestive power of gastric juice, as well as the absorptive power of the stomach, Austin, A. E., 246; idiopathic dilatation of the colon, Fitz, R. H., 274; intermittent gastric hypersecretion, with a report of a case, King, A. W., 293; strangulated diaphragmatic hernia, Mixter, S. J., 301; a case of acute general peritonitis, operation, recovery, Mumford, J. G., 301; a case of intestinal obstruction from a hair-ball, Brewster, G. W. W., 395; hair-eating children and convulsions, Lyon, F. D., 395; gunshot wound of the abdomen, with multiple wounds of the intestine, Lothrop, H. A., 405, 413; perigastric adhesions causing indigestion and gastric dilatation, Shattuck, F. C., 428; perforating gastric ulcer, operation, death, Warren, J. C., 428; perforating gastric ulcer simulating appendicitis, Shattuck, F. C., 429; hemorrhage from the whole gastric mucosa simulating gastric ulcer, Shattuck, F. C., 430; pyloric stenosis and gastric dilatation from gastric ulcer, hour-glass contraction of the stomach, Shattuck, F. C., 431; perforating ulcer of the duodenum, Weir, R. F., 453, 603; a study of the nature and significance of the symptoms in disorders of the stomach, Hewes, H. F., 701; the origin of oxaluria from fermentation in the gastro-intestinal tract, Herter, C. A., 545; acute phlegmonous gastritis, Kinnicutt, F. P., 545; cases of diarrhea associated with the presence of strongylus intestinalis in the stools, Thayer, W. S., 548; the attitude of the physician and surgeon to appendicular symptoms complicating typhoid fever, Hare, H. A., 550; observations on appendicitis, Van Gieson, I., 550; stomach conditions in early tuberculosis, Reed, B., 573; gastric hemorrhage, Rodman, W. L., 586, 604; perforating ulcer of the stomach, Finney, J. M. T., 604; malignant diseases of the stomach and pylorus, Mayo, W. J., 604; benign obstruction of the pylorus, Kammerer, F., 605; gastric dilatation, gastroptosis, Curtis, B. F., 605; hour-glass contraction of the stomach, Watson, F. S., 605; diagnosis of cancer of the stomach, Hemmeter, J. C., 606; adhesions of the stomach, Cabot, A. T., 606; gastric functions before and after gastro-enterostomy, Fischer, G. S., 606; stricture of the esophagus following typhoid fever, gastrostomy, Dennis, F. S., 606; surgery of the stomach, Keen, W. W., 607; the methods of closing abdominal incisions, Richardson, M.**

H., 607; strangulated hernia through a traumatic rupture of the diaphragm, laparotomy, recovery, Walker, E. W., 608; a retrospect of surgery of the stomach, Walker, H. O., 633; non-perforating gastric ulcer with and without hemorrhage, Rodman, W. L., 633; the diagnosis and treatment of cholelithiasis, Means, W. J., 633; cholecystotomy with special reference to removal of the mucous membrane of the gall-bladder in certain cases as a substitute, Mayo, W. J., 634; the importance of early operation for biliary calculi, Richardson, M. H., 634; the present status of the Murphy button, Murphy, J. B., 635; colostomy for permanent fecal fistula, Wyeth, J. A., 635; the treatment of obstinate constipation based on new points in the anatomy and histology of the rectum and colon, Pennington, J. R., 635; repair after resection of the intestine, Evans, W. A., 635; appendicitis, colitis as an etiologic factor, the question of removal of the appendix in all cases operated upon, Porter, M. S., 636; appendiceal fistula, Deaver, J. B., 636; dysentery, Flexner, S., 638; note on tropical dysentery, Musser, J. H., 638; foreign body in the rectum, Henry, J. G., 645; sarcoma of the intestines, Van Zwalenberg, C., 700.

Diphtheria. Varieties of the diphtheria bacillus, Westbrook, F. F., 548.

Dislocation. A case of old shoulder dislocation, Peckham, F. E., 192; unreduced and irreducible dislocations, Bevan, A. D., 698.

Dock, G. Address before the Section on the Practice of Medicine of the American Medical Association, 561.

Doolittle, W. F. Preliminary report on investigations in the bacteriology of scarlet fever in the scarlet-fever wards of the Children's Hospital, Berlin, 645.

Drugs. Sixteen years' experience in food and drug inspection, Abbott, S. W., 82.

Dudley, E. C. Stricture of the ureter a possible result of laceration of the cervix uteri, and ureterovaginal fistula a result of trachelorrhaphy, 215, 228.

Dunham, E. K. The nature of malignancy in neoplasms, 66.

Dust. Dust storms on Boston's Back Bay, 175; mud and dust in winter, 202; cases of pneumonia, 340.

Dwight, T. What position shall universities take with regard to investigation? 1.

Ends, B. B. Operations for injuries of the median and ulnar nerves, 700.

Ear. Otitis media in all grave diseases of infancy, Pomeroy, E. H., 59.

Earles, W. H. Injuries of the skull and its contents, 699.

Eastman, J. R. The advantages of retained catheter, 700.

Edes, R. T. A modification of the sphygmograph, 694.

Editorials. Our attitude toward investigation, 18; medical meetings and medical papers, 18; the case method of teaching medicine, 42; Sir James Paget, 43; the physician and the surgical consultant, 70; original research, a means or an end, 71; the dispersion of bequests, 94; the wounded in South Africa, 95; report of the Surgeon-General of the Army, 118; military surgery in South Africa, 118; the evolution of surgery in London, 147; sanitariums for tuberculosis, 149; human vivisection, 172; State care of the insane, 173; clinical instruction in small sections, 174; dust storms on Boston's Back Bay, 175; annual report of Harvard University, 201; mud and dust in winter, 202; cases of rash after enemata, 203; the limit is reached, 204; sanatoria for tuberculosis and prophylaxis, 230; some anti-vivisection "arguments," 231; the controversy as to the nutritive value of alcohol, 258; the volumes of "Proceedings," 259; progress in medical teaching, 282; Christian Science a menace to the public weal, 283; the question of prizes, 283; the development of out-patient departments, 310; our attitude toward epidemic disease, 311; the Craig Colony for Epileptics, 311; the proper seating of school children, 339; the Pathological Institute of the New York State Hospitals, 339; pneumonia, 340; mosquitoes and malaria, 340; destruction of the mosquito for the limitation of malaria, 341; The Long Island Hospital, Boston Harbor; report of the trustees, 362; on the effect of the exclusion of certain diseases as causes of mortality, 363; the "humane" bullet, 364; the responsibilities and qualifications of a health commissioner, 366; pharmacal translations, 366; swedish gymnastics, 390; science pure and science applied, 411; annual report of the Massachusetts General Hospital, 415; medicine as a means of grace, 438; the fatality of certain diseases, of a certain number attacked what percentage dies? 439; lobar pneumonia, 440; small-pox is a preventable disease, 440; typhoid fever and the water supply of Paris, 468; Sir Thomas Douglas Maclagan, 496; Dr. Bowditch's address, 468; hospital endowment and hospital abuse, 522; the filtering power of the soil and the conveyance of bacteria by means of subsoil water, 523; first report of the Massachusetts State Board of Insanity, 551; the transmission of syphilis to the lower animals, 552; compulsory notification of tuberculosis, 573; proprietary nomenclature of the pharmacopeia, 576; the twenty-fourth annual report of the Local Government Board of England (1898-99), supplement. Report of the medical officer, 609; hospital statistics, 611; the Massachusetts Medical Society, 641; the death-rate of Chicago, 642; American Medical Association, 642; three notable volumes, 671; alcohol in the tropics, 672; adjustable school furniture, 673; the scientific physician, 701; adjustable furniture for schools, 702.

Education. The case method of teaching systematic medicine, Cannon, W. B., 31; the case method of teaching medicine, 42; the case method of teaching systematic medicine, White, J. W., 153; a system of clinical instruction, for the simultaneous instruction in small sections of a large number of students, Wentworth, A. H., 155; clinical instruction in small sections, 174; annual report of Harvard University, 201; progress in medical teaching, 282; the old order changes, Mumford, J. G., 586; vivisection in the Harvard Medical School, a reply, Putnam, J. J., 209; the medical school of the future, Bowditch, H. P., 445; some thoughts on medical education, Shattuck, F. C., 529; the inductive method applied to medicine, Eliot, C. W., 557, 567; the course in pathology at the Harvard Medical School, Councilman, W. T., 558, 567; the case system in medicine, Cannon, W. B., 563, 568; a personal experience in the teaching of surgery, Burrell, H. L., 565, 568; a consideration of the principal objections to "section teaching," together with some of its advantages, Wentworth, A. H., 566, 568; on medical education, Wyman, M., 569; the endowment of medical colleges, Keen, W. W., 583.

Egan, P. R. The best diet for the tropics, the army ration, 47.

Elkhorn, M. The early recognition and management of malignant disease in the digestive system, 67.

Electrozone. Disinfectant value of "electrozone," 394.

Eliot, C. W. The inductive method applied to medicine, 557, 567.

Elting, A. W. Intermittent gastric hypersecretion, with a report of a case, 293.

Engelmann, G. J. Third International Congress of Obstetrics and Gynecology, held at Amsterdam, August 8-12, 1899, 403, 412.

Epidemic Disease. Our attitude toward epidemic disease, 311.

Epilepsy. Epilepsy, Paul, W. E., 107, 112; the Craig Colony for Epileptics, 311; a communication on the relation of uric-acid secretion to epileptic attacks, Putnam, J. J., and Pfaff, F., 543.

Epistaxis, Cobb, F. C., 2, 12.

Ernst, H. C. Development of the microscope, 395; closing statement for the remonstrants to the Massachusetts House bill No. 917, entitled "an act for the further prevention of cruelty to animals," before the joint committee on probate and insolvency, March 15, 1900, 650.

Evans, W. A. Repair after resection of the intestine, 635.

Extra-uterine Pregnancy. A case of extra-uterine pregnancy, with operation, Johnson, F. W., 355; double extra-uterine pregnancy, Cabot, R. C., 428; a case of extra-uterine pregnancy, Holyoke, F., 655.

Fatality of certain diseases: of a certain number attacked what percentage dies? 439.

Fibroids. The conservative operative treatment of fibroids, report of three cases, Burrage, W. L., 349, 358; two cases illustrating conservative operations for uterine fibroids, Kingman, R. A., 352.

Filaria. A case of filaria, with specimens of the adult parasite, Lothrop and Pratt, 548.

Finney, J. M. T. Perforating ulcer of the stomach, 604.

Fischer, C. S. Gastric functions before and after gastro-enterostomy, 606.

Fitz, G. W. Swedish gymnastics, 579.

Fitz, R. H. Idiopathic dilatation of the colon, 274; case of cystoma of the pancreas, 550.

Flexner, S. The nature of the new tissue in cirrhosis of the liver, and its distribution, 549; dysentery, 638.

Folie à deux, Jelly, A. C., 369, 386.

Food. Sixteen years' experience in food and drug inspection, Abbott, S. W., 82; aseptic milk, Randall, G. M., 122.

Fractures. The open or operative treatment of fresh fractures, is it ever justifiable? Scudder, C. L., 289, 304, 322.

Freeman, L. Union following pathological fracture of the femur due to secondary carcinoma, spontaneous disappearance of carcinoma of the lip, 696.

Frontal Sinus. Empyema of frontal sinus, Paige, J. D., 355.

Fungus. A new pathogenic fungus (sporothrix Schenck), Hektoen, L., 545.

Fussell, M. H. Perichondritis of the larynx in typhoid fever, with exhibition of a patient and a specimen, 550; examination of the blood, its value to the general practitioner, 634.

Galloway, H. P. H. The relation of deformity of the pelvis to lateral curvature of the spine, 629.

Garceau, E. Cases of cholecystotomy, 104.

Generative System. Recent progress in genito-urinary surgery, Watson, F. S., and Thorndike, F., 63; malignancy in the female genito-urinary system, Baldwin, L. G., 66; on the high operation for disease within the scrotum, Mumford, J. G., 89; ovarian cysts with twisted pedicles, Richardson, M. H., 91; stricture of the ureter a possible result of laceration of the cervix uteri and ureterovaginal fistula a result of trachelorrhaphy, Dudley, E. C., 215, 228; abstract of paper on "further experience with the operative treatment of," Burrage, W. L., 241, 255; steps in the treatment of chronic hyperplastic and senile endometritis, putrid abortion and puerperal sepsis, Johnson, F. W., 269, 279; cysts of both ovaries, hydatidiform mole, removed by abdominal incision, Porter, C. B., 298; ruptured ovarian cyst, Cleveland, C., 337; the conservative operative treatment of fibroids, report of three cases, Burrage, W. L., 349, 358; vaginal myomectomy, removal of fibroid nodule three centimetres (one and one-fourth inches) by one and one-half centimetres (seven-eighths inch) of subperitoneal evolution from the front wall of the uterus by anterior colpotomy, Burrage, W. L., 349; morcellation of submucous nodule at fundus, and polyp with pedicle springing from fundus, Burrage, W. L., 350; two cases illustrating conservative operations for uterine fibroids, Kingman, R. A., 352; a peculiar case of adenocarcinoma of the body of the uterus, Vietor, A. C., 353; on intermenstrual dysmenorrhea, Storer, M., 397, 411; treatment of cancer of cervix of the uterus compliheated, Johnston, G. B., 401, 411; Third International Congress of Obstetrics and Gynecology, Engelmann, G. J., 403; the question of supernumerary Fallopian tubes, with specimens of Fallopian tubes with supernumerary ostia, Vietor, A. C., 513, 518; a new method of intra-abdominal operation for retroverted uteri, Kaan, G. W., 602.

Gibson, W. P. The simple and efficient treatment of calcaneus paralyticus in young children, 629; a case of tuberculosis of the astragalus with anchylosis and subsequent amputation, 631.

Gillette, A. J. Spasmodic lateral curvature of the spine, 629.

Goffe, J. R. The use of the angiotribe, 373.

Goldthwait, J. E. Knee-joint surgery for other than tubercular processes, 662.

Graves's disease without exophthalmic goitre, Thomson, W. H., 550.

Griffith, J. B. C. Recurrent vomiting in childhood, 544.

Gunshot Wounds. A pistol wound of the abdomen, Atwood, C. A., 39; remarks upon the gunshot wounds of the reduced calibre rifles in the Santiago campaign, La Garde, L. A., 57; the wounded in South Africa, 95; gunshot wound of the abdomen, with multiple wounds of the intestine, Lothrop, H. A., 405, 413; the marks produced by pistol shots, Hough, G. De N., 657, 659.

Gymnastics. Physical training and Swedish gymnastics, 390; Swedish gymnastics, Fitz, G. W., 579.

Hair. A case of intestinal obstruction from a hair-ball, Brewster, G. W. W., 395; hair-eating children and convulsions, Lyon, F. D., 395; another hair-ball, Homans, J., 419.

Ham, J. R. Death in the dental chair, 527.

Hamilton, W. D. Growths in the frontal sinus, 699.
Happel, T. J. Pseudo (?) or modified (?) small-pox, 640.
Hare, H. A. The attitude of the physician and surgeon to appendicular symptoms complicating typhoid fever, 550.
Harrington, F. B. Pudendal hernia of the bladder in a woman forty-six years of age, 431; a case of subpubic hernia of the bladder through the pelvic floor, operation, 608.
Harvard University. Annual report of Harvard University, 201.
Heat in Argentina, 394.
Hektoen, L. A new pathogenic fungus (sporothrix Schenck), 545.
Hemmeter, J. C. Diagnosis of cancer of the stomach, 606.
Henry, F. P. Clinical notes on cases of pernicious anemia, 546.
Henry, J. G. Foreign body in the rectum, 645.
Hernia. Strangulated diaphragmatic hernia, Mixter, S. J., 301; pudendal hernia of the bladder in a woman forty-six years of age, Harrington, F. B., 431; a case of subpubic hernia of the bladder through the pelvic floor, operation, Harrington, F. B., 608; the treatment of hernia in children, Ochsner, A. J., 665; treatment of ventral hernia, Johnson, M. M., 665; cure of inguinal hernia in the male, Marcy, H. O., 665.
Heroin. A clinical study of heroin, Daly, J. R. L., 190.
Herrick, J. B. Notes on diabetes, (1) on the occasional low specific gravity of diabetic saccharine urine, (2) on casts in the urine during diabetic coma, 543.
Herter, C. A. The origin of oxaluria from fermentation in the gastro-intestinal tract, 545.
Hewes, H. F. A simple method for the quantitative analysis of the gastric contents for use in clinical work, 9; a study of the nature and significance of the symptoms in disorders of the stomach, 504, 515.
Higgins, F. A. A sterilizer and equipment for confinement cases, 88, 91; recent progress in obstetrics, 138.
Hip. Allis's method of reducing a dislocation of the hip, Warren, J. C., 40; dislocations of the hip, demonstrations on the cadaver illustrative of their mechanism, Allis, O. H., 606.
Hoffmann, P. A suspension pressure chair for scoliosis, 630.
Holmes, E. W. Anatomy of hanging, 700.
Holyoke, F. A case of extra-uterine pregnancy, 655.
Homans, J. On the advisability of a more or less general exploration of the abdomen when it has been opened for an operation, 189; another hair-ball, 443.
Homeopathy. Homeopathy and the public, Sumner, A. F., 22.
Horseflesh as a food, 644.
Hospitals. Hospital endowment and hospital abuse, 522; hospital statistics, 611.
Hough, G. De N. The marks produced by pistol shots, 657, 659.
Howard, L. O. Structural and other differences between the several mosquitoes of North America, 641.
Hubbard, J. C. The practical value of the white blood count in surgical cases, 409, 412.
Humerus. Comminuted fracture of humerus, Porter, C. B., 300; fracture of surgical neck of humerus, with displacement of head of humerus, Porter, C. B., 300.
Humidity. Humidity and disease, 99; the relative humidity of our houses in winter, Ward, R. de C., 217.
Hydrochloric Acid. Preservative qualities of hydrochloric acid, 555.
Hydrophobia in Athens, 314.
Hygiene, Health and Boards of Health. The relative humidity of our houses in winter, Ward, R. de C., 217; progress in public hygiene, Abbott, S. W., 330, 356, 380, 432; the proper seating of school children, 339; the responsibilities and qualifications of a health commissioner, 393; boards of health, 443.
Hyperchlorhydria. Nitrate of silver in hyperchlorhydria, Smithwick, M. P., 6, 15.
Influenza. Influenza in London, 75; the discovery of the bacillus of influenza, Thayer, A. S., 263; influenza and pneumonia in New York, 285; the discovery of the influenza bacillus, Wright, J. H., 286.
Instruments and Apparatus. A sterilizer and equipment for confinement cases, Higgins, F. A., 88, 91; the clinical value of Oliver's hemocytometer, Scannell, D. D., 109; a new needle holder, Monks, G. H., 296; a self-closing stopper for an ether bottle, Crandon, L. R. G., 296; the stereoscope, Pryor, W. B., 337; the use of the angiotribe, Goffe, J. R., 373; a new nasal scissors for the removal of the lower turbinate, Cobb, C. M., 603; a suspension pressure chair for scoliosis, Hoffmann, P., 630; a new back brace for Pott's disease, Dane, J., 630; brace for lateral curvature of the spine, Davis, G. G., 664; a modification of the sphygmograph, Edes, R. T., 694.
Investigation. What position shall universities take with regard to investigation? Dwight, T., 1; our attitude toward investigation, 18.
Jackson, J. W. A case of splenic anemia, 424.
Jacobi, A. Banquet in honor of Dr. Jacobi, 492; heart lesions in infancy, 571.
Janeway, E. G. Address before the Association of American Physicians, 542.
Jelly, A. C. Folie à deux, 369, 386.
Johnson, F. W. Steam in the treatment of chronic hyperplastic and senile endometritis, putrid abortion and puerperal sepsis, 269, 279; a case of extrauterine pregnancy, with operation, 355.
Johnson, M. M. Treatment of ventral hernia, 665.
Johnston, G. B. Treatment of cancer of the cervix of the uterus complicated by pregnancy, 401, 411.
Johnstone, W. W. Case of Addison's disease under treatment with suprarenal extract, 549.
Joints. The treatment of tuberculosis of the knee-joint, Townsend, W., 698.
Jones, F. A. Clinical observations in malaria, 668.
Jurisprudence. The law of dying declarations, Sughrue, M. J., 653, 668.
Kaan, G. W. A new method of intra-abdominal operation for retroverted uteri, 602.
Kammerer, F. Benign obstruction of the pylorus, 605.
Keen, W. W. The endowment of medical colleges, 583; surgery of the stomach, 606.
Kellogg, J. H. The hydriatic treatment of tuberculosis, 574.
Kelly, A. O. J. Pathogenesis and clinical features of arthritis deformans, 669.
Kelly, H. A. Nephro-ureterocystectomy, 700.
Kingman, R. A. Two cases illustrating conservative operations for uterine fibroids, 352.
Kinnicutt, F. P. Acute phlegmonous gastritis, 545.
Kleiss, A. C. The construction and management of small cottage sanatoria for consumptives, 572.
Knapp, P. C. The unity of the acute psychoses, 181; the problem of Boston's insane, 377, 383.
Knee. Dislocation of internal semilunar cartilage, removal, good recovery, Porter, C. B., 298; floating cartilages in both knee joints, Porter, C. B., 299.
Knight, H. S. A case of pernicious vomiting of pregnancy, 512, 518.
Knopf, S. H. The tenement house and tuberculosis, 233.
Laboratories. Hospital and ward clinical laboratories, Camac, C. N. B., 657.
La Garde, L. A. Remarks upon the gunshot wounds of the reduced calibre rifles in the Santiago campaign, 57.
Larynx. Perichondritis of the larynx in typhoid fever with exhibition of a patient and a specimen, Fussell, M. H., 550.
Lazear, J. W. Pathology of malarial fevers, structure of the parasites and changes in the tissues, 640.
Leffingwell, A. F. Dr. Leffingwell protests, 419.
Leonard, C. L. Diagnosis of calculous disease of kidney, ureters and bladder by the x-rays, 666.
Lindstrom, A. H. On the treatment of pain in tabes dorsalis, report of a case, 37.
Lithiasis preputialis, Blodgett, A. N., 675.
Liver. Resection of a portion of the liver for adeno carcinoma of the cystic duct, 276; traumatic rupture of echinococcus cyst of liver, Porter, C. A., 302; adenocystoma of the liver, Shattuck, F. C., 427; the nature of the new tissue in cirrhosis of the liver and its distribution, Fiexner, S., 549.
Lloyd, S. Laminectomy for diseases and injuries to the spinal cord, 699.
London. The evolution of surgery in London, 147.
Long Island Hospital, Boston Harbor, report of the trustees, 362.
Loomis, H. P. Some personal observations on the effect of intrapleural injection of nitrogen gas in tuberculosis, 573.
Lord, S. A. Two cases of Thompsen's disease and one of transient myotone, occurring in one family, 249.
Lothrop and Pratt. A case of filaria, with specimens of the adult parasite, 548.
Lothrop, H. A. Gunshot wound of the abdomen, with multiple wounds of the intestine, 405, 413.
Lovett, R. W. The mechanics of lateral curvature of the spine, 622, 629.
Lovett, R. W., and Withington, C. F. Typhoid spine, 317, 336.
Lund, F. B. A case of perforating gastric ulcer, operation, recovery, with remarks on the surgery of gastric ulcer, 25.
Macdonald. Address before the Medical Society of the State of New York, 166.
MacDougall, R. Psychology and heredity, 185, 197, 219.
Maceo. Antonio Maceo's skull, 207.
Maine. Special medicine chest for the hospital ship *Maine*, 21.
Malaria. Anopheles and malaria, Celli, 261; mosquitoes and malaria, 340; destruction of the mosquito for the limitation of malaria, 341; malaria and mosquitoes, Rosse, I. C., 628; pathology of malarial fevers, structure of the parasites and changes in the tissues, Lazear, J. W., 640; etiology of malaria with special reference to mosquitoes, Sternberg, W. S., 641, some typical cases of estivo-autumnal and tertian malarial fevers, with study of the parasites observed in the blood, Craig, C. F., 668; clinical observations in malaria, Jones, F. A., 668; malarial hemoglobinuria, Burns, W. B., 668; prolonged fevers of obscure origin, Preble, R. B., 668.
Malignant Disease, Bryant, J. D., 65; the nature of malignancy in uterine disease, Kelly, H. A., 66; malignancy in the female genito-urinary system, Baldwin, L. G., 66; malignant disease of the nose and throat, Wright, J., 67; the early recognition and management of malignant disease in the digestive system, Einhorn, M., 67; the treatment of inoperable malignant tumors, Coley, W. B., 68.
Mallory, F. B. Proliferation and phagocytosis, 547.
Manley, T. H. A brief note on some of those grave abdominal lesions which often defy diagnosis, 135.
Marcy, H. O. Cure of inguinal hernia in the male, 665.
Marine-Hospital Service. Examination for assistant surgeons in the United States Marine-Hospital Service, 74.
Massachusetts General Hospital. Clinical meeting of the medical board, 274, 297, 425; annual report, 415.
Materia Medica and Therapeutics. A clinical study of heroin, Daly, J. R. L., 190; disinfectant value of electrozone, 394; the hydriatic treatment of tuberculosis, Kellogg, J. H., 574; petroleum oil in the treatment of phthisis, Robinson, W. D., 574; proprietary medicines and the pharmacopeia, 576; a final report on the use of pure carbolic acid in the treatment of tubercular and purulent diseases of joints and bones, Phelps, A. M., 629.
Mayo, W. J. Malignant diseases of the stomach and pylorus, 604; cholecystotomy, with special reference to removal of the mucous membrane of the gall-bladder in certain cases as a substitute, 634.
McCurdy, S. L. Developmental shortening in tubercular bone disease, 664.
Means, W. J. The diagnosis and treatment of cholelithiasis, 633.
Measles. The importance of restricting measles, 314.
Medicine as a means of grace, 438.
Meetings. Medical meetings and medical papers, 18.
Microscope. Development of the microscope, Ernst, H. C., 395.
Milk. Aseptic milk, Randall, G. M., 122.
Mind. State control of the insane, 74; report of a few cases of insanity treated by the cold pack, Abbott, 164; State care of the insane, 173; the unity of the acute psychoses, Knapp, P. C., 181; psychology and heredity, MacDougall, R., 185, 197, 219; Folie à deux, Jelly, A. C., 369, 386; the problem of Boston's insane, Knapp, P. C., 377, 383; the work of the trustees of the Boston Insane Hospital and their plans for its future development, Baldwin, H. C., 379, 383; first report of the Massachusetts State Board of Insanity, 551.

Mitchell, J. K. Study of a mummy with infantile paralysis, 550.
Mixter, S. J. Strangulated diaphragmatic hernia, 301.
Monks, G. H. A new needle holder, 296.
Myers, J. L. Three unusual cases of angioneurotic edema in infancy, 10; splenic anemia, 422, 436.
Mortality. On the effect of the exclusion of certain diseases as causes of mortality, 363.
Mosquitoes and malaria, 340; destruction of the mosquito for the limitation of malaria, 341; mosquitoes and the march of empire, 419; malaria and mosquitoes, Rosse, I. C., 623; etiology of malaria, with special reference to mosquitoes, Thayer, W. S., 641; structural and other differences between the several mosquitoes of North America, Howard, L. O., 641.
Mumford, J. G. On the high operation for disease within the scrotum, 89; the old order changes, 286, 315; a case of acute general peritonitis, operation, recovery, 301; a case of Chopart's amputation, with tendon implantation and tenotomy, 301.
Munson, E. L. The ideal ration for an army in the tropics, 463, 489, 501, 534.
Murphy, J. B. The present status of the Murphy button, 635.
Musser, J. H. Note on tropical dysentery, 626.
Nelson, C. D. Experiments with tuberculin, 676.
Nervous System. On the treatment of pain in tabes dorsalis, report of a case, Lindström, A. H., 37; epilepsy, Paul, W. E., 107, 112; case of combined superior and inferior poliencephalitis, Walton, G. L., 169; a case of multiple cerebral hemorrhages from chronic lead poisoning, with necropsy, Courtney, J. W., 136, 142; the unity of the acute psychoses, Knapp, P. C., 181; the gastro-intestinal tract in nervous disease, Pearce, F. S., 242; two cases of Thompsen's disease, and one of transient myotone, occurring in one family, Lord, S. A., 349; injuries about the shoulder at birth, Stone, J. S., 265; instruction in co-ordination in tabes, Putnam, J. J., 274; muscular dystrophy, Putnam, J. J., 274; case of acromegaly, Walton, G. L., 274; a case of poliencephalitis superior and inferior with acute anterior poliomyelitis, Taylor, E. W., 275; the Craig Colony for Epileptics, 311; hydrophobia in Athens, 314; a case of periodic palsy, with suggestions as to the pathogenesis, Putnam, J. J., 334; on distortion of the spine, with the report of two cases of diplegia brachialis dua of Erb's type, Courtney, J. W., 345; subcortical motor aphasia, Walton, G. L., 425; on ischemic paralysis and contracture of muscles, Bernays, A. C., 589; a communication on the relation of uric-acid secretion to epileptic attacks, Putnam, J. J., and Pfaff, F., 543; report of a case of acute ascending paralysis showing hematoporphyrinuria, Stoekton, C. G., 543; study of a mummy affected with infantile paralysis, Mitchell, J. K., 550; tetanus treated with antitetanic serum, Blake, J. D., 609; laminectomy for diseases and injuries to the spinal cord, Lloyd, S., 699; operations for injuries of the median and ulnar nerves, Eads, B. S., 700.
Newton, R. C. Report of certain cases of tuberculosis which were apparently due to the nature of the soil, 571.
Noble, C. P. Remarks on the influence of technique upon the results of closure of wounds of the abdominal walls, 237, 256.
Nomenclature. The limit is reached, 204.
Nose. Malignant disease of the nose and throat, Wright, J., 67.
Obesity. DeBlois, 335.
Ochsner, A. J. The treatment of hernia in children, 665.
Old Age. Results of surgery in the aged, Tuttle, J. P., 700.
Olecranon. Ununited fracture of olecranon, Porter, C. B., 299; separation of the epiphysis of the olecranon, Cotton, F. J., 692.
Orthopedic Surgery. Report on orthopedic surgery, Bradford, E. H., and Brackett, E. G., 225.
Orthopraxy. The simple and efficient treatment of calcaneus paralyticus in young children, Gibney, V. P., 629; a final report on the use of pure carbolic acid in the treatment of tubercular and purulent diseases of joints and bones, Phelps, A. M., 629; the mechanics of lateral curvature of the spine, Lovett, R. W., 629, 639; some of the problems involved in the treatment of lateral curvature of the spine, Shaffer, N. M., 629; the relation of deformity of the pelvis to lateral curvature of the spine, Galloway, H. P. H., 629; spasmodic lateral curvature of the spine, Gillette, A. J., 629; the results of my observations in lateral curvature of the spine, clinically, mechanically and pathologically, Phelps, A. M., 629; the support supplementing the Taylor brace in Pott's disease, Packard, G. B., 630; a suspension pressure chair for scoliosis, Hoffmann, P., 630; results of treatment of congenital dislocation of the hip, Bradford, E. H., 630; a new back brace for Pott's disease, Dane, J., 630; tendon transplantation in the treatment of paralytic deformities, Townsend, W. R., 630; a case of congenital dislocation of the shoulder, with radiograph, Porter, J. L., 630; a case of tuberculosis of the astragalus with anchylosis and subsequent amputation, Gibney, V. P., 631; forcible correction of spinal curvature followed by paralysis, Taylor, R. T., 662; a case of scorbutic spine, Ridlon, J., 662; knee-joint surgery for other than tubercular processes, Goldthwait, J. E., 662; the treatment of vertebral tuberculosis with reference to the forcible correction of the deformity, Ridlon, J., 663; brace for lateral curvature of the spine, Davis, G. G., 664; retardation of growth as a cause of shortening after coxitis, Taylor, H. L., 664; developmental shortening in tubercular bone disease, McCurdy, R. L., 665; rapid osteoclasis for the correction of rhachitic deformities of the legs, Blanchard, W., 664; an operation for ununited intracapsular fracture of the hip, Davis, G. G., 664.
Osler, W. A Rhode Island philosopher, Elisha Bartlett, 49, 77.
Out-Patient Department. The development of out-patient departments, 310.
Ovary. Ovarian cysts with twisted pedicles, Richardson, M. H., 91; cysts of both ovaries, hydatidiform mole removed by abdominal incision, Porter, C. B., 298; ruptured ovarian cyst, Cleveland, 337.
Packard, G. B. Anterior support supplementing the Taylor brace in Pott's disease, 630.
Paige, J. D. Empyema of frontal sinus, 355.
Pancreas. Case of cystoma of the pancreas, Fitz, R. H., 550.
Papers. Medical meetings and medical papers, 18.
Parasites. A case of filaria, with specimens of the adult parasite, Lothrop and Pratt, 548.
Paris. Letter from Paris, 261; an excursion to the Paris exhibition, Crothers, T. D., 283; typhoid fever and the water supply of Paris, 466.
Park, W. H. The elimination of deleterious substances from antitoxic sera, 548.
Patella. Fresh fractured patella, sutured with catgut through the periosteum, Warren, J. C., 276; slipping patella, Porter, C. B., 298; fracture of right patella, Porter, C. B., 299; fractures of the patella, Barton, J. W., 698.
Pathology. Report on progress in pathology, Wright, J. H., 253; the Pathological Institute of the New York State Hospitals, 339; the course in pathology at the Harvard Medical School, Councilman, W. T., 537, 568.
Paul, W. E. Epilepsy, 107, 112.
Pavements. Street paving in Boston, 234; street pavements, 263.
Pearce, F. S. The gastro-intestinal tract in nervous disease, 242.
Peckham, F. E. A case of old shoulder dislocation, 192.
Pelvic Gumma, Stone, A. K., 425.
Pelvis. Congenital cystic tumor of the pelvis, Willard, De F., 698.
Pennington, J. B. The treatment of obstinate constipation based on new points in the anatomy and histology of the rectum and colon, 635.
Pharmacopeia. H. C. Wood, address, 487.
Phelps, A. M. A final report on the use of pure carbolic acid in the treatment of tubercular and purulent diseases of joints and bones, 629; the results of my observations in lateral curvature of the spine, clinically, mechanically and pathologically, 629.
Physical training and Swedish gymnastics, 397.
Physiology. American Society of Physiologists, 21.
Plague. Precautions against the importation of plague, 121; a plague laboratory, 207; plague at Mengtze, Yunnan, China, 288; reports of plague in California exaggerated, 579.
Poisons. A case of ptomaine poisoning, Cones, W. P., 90; a case of multiple cerebral hemorrhages from chronic lead poisoning, with necropsy, Courtney, J. W., 136, 142.
Pomeroy, S. H. Otitis media in all grave diseases of infancy, 89.
Porter, C. A. Traumatic rupture of echinococcus cyst of liver, 302.
Porter, C. B. Sarcoma of the tonsil, 297; slipping patella, 298; cysts of both ovaries, hydatidiform mole, removed by abdominal incision, 298; dislocation of internal semilunar cartilage, removal, good recovery, 298; ununited fracture of olecranon, 299; floating cartilage of the knee joint, 299; fracture of right patella, 299; comminuted fracture of humerus, 300; fracture of surgical neck of humerus, with displacement of head of humerus, 300.
Porter, J. L. A case of congenital dislocation of the shoulder, with radiograph, 630.
Porter, M. B. Appendicitis, colitis as an etiologic factor, the question of removal of the appendix in all cases operated upon, 626.
Pratt, J. H., and Fulton, F. T. Report of cases in which the bacillus aërogenes capsulatus was found, 599.
Preble, R. B. Prolonged fevers of obscure origin, 668.
Pregnancy, affections connected with. A sterilizer and equipment for obstetric cases, Higgins, F. A., 85, 91; recent progress in obstetrics, Higgins, F. A., 136; steam in the treatment of chronic, hyperplastic and senile endometritis, putrid abortion and puerperal sepsis, Johnson, F. W., 269, 279; a case of extra-uterine pregnancy with operation, Johnson, F. W., 335; treatment of cancer of the cervix of the uterus complicated by pregnancy, Johnson, G. B., 401, 411; Third Clinical International Congress of Obstetrics and Gynecology, Engelmann, G. J., 403; double extra-uterine pregnancy, Cabot, H. C., 423; a case of pernicious vomiting of pregnancy, Twombly, E. L., 510; bicornate uterus, with twin pregnancy, abortion from one horn, Winn, C. H., 511; a case of pernicious vomiting of pregnancy, Knight, H. S., 512; a case of extra-uterine pregnancy, Holyoke, F., 535.
Prizes. The question of prizes, 283.
Proceedings. Two volumes of "Proceedings," 259.
Proliferation and phagocytosis, Mallory, F. B., 547.
Pryor, W. R. A cystocope, 357.
Psychology and Heredity, MacDougall, R., 185, 197, 219.
Ptomaines. A case of ptomaine poisoning, Cones, W. P., 90.
Putnam, J. J. Vivisection in Harvard Medical School, a reply, 209; instruction in co-ordination in tabes, 274; muscular dystrophy, 274; a case of periodic palsy, with suggestions as to the pathogenesis, 334.
Putnam, J. J., and Pfaff, F. A communication on the relation of uric-acid secretion to epileptic attacks, 543.
Quarantine. Additions to quarantine regulations, 177.
Randall, G. M. Aseptic milk, 122.
Ration. The ideal ration for an army in the tropics, Munson, E. L., 463, 489, 501, 534.
Realism in medicine, Cabot, A. T., 615, 647.
Recent Progress. Genito-urinary surgery, Watson, F. S., and Thorndike, P., 63; obstetrics, Higgins, F. A., 136; dermatology, Bowen, J. T., 193; orthopedic surgery, Bradford, E. H., and Brackett, E. G., 225; pathology, Wright, J. H., 253; thoracic diseases, Sears, G. G., and Bartol, J. W., 276, 302; public hygiene, Abbott, S. W., 330, 356, 380, 432.
Reed, S. Stomach conditions in early tuberculosis, 573.
Relapsing Fever. A case of relapsing fever, Ward, G. O., 36.
Research. Original research: a means or an end, 71.
Respiratory System. Influenza in London, 75; intestinal digestion and its relation to pulmonary disease, Burr, C. R., 101; the Massachusetts State Hospital for Consumptives at Rutland, its purpose and the work accomplished during the first year, Bowditch, V. Y., 127, 142; recent progress in thoracic diseases, Sears, G. G., and Bartol, J. W., 276, 302; influenza and pneumonia in New York, 285; idiopathic pneumatosthorax, with recovery after aspiration, Boland, E. S., 321, 333; dust pneumonia, 340; lobar pneumonia, 440; sanitarium treatment of pulmonary tuberculosis and its results, Trudeau, E. L., 544; degenerated echinococcus cyst of the pleura, Cary, C., 550; report of certain cases of tuberculosis which were apparently due to the nature of the soil, Newton, R. C., 571; educational and legislative control of tuberculosis, Denison, C., 573; some phases of the tuberculosis problem in Colorado, Bonney, S. G., 572; the construction and management of small sanatoria for consumptives, Klebs, A. C., 572; some personal observations on the effect of intrapleural injections of nitrogen gas in tuberculosis, Loomis, H. P., 573; subsequent history of patients apparently cured by antituberele serum, Stubbert, J. E., 573; the phlebitis of advanced phthisis, with report of cases of phthisis following ab-

scesses of the hand, Curtin, R. C., 573; the diagnostic value of tuberculin in tuberculosis, Anders, J. M., 573; the hydriatic treatment of tuberculosis, Kellogg, J. H., 574; petroleum oil in the treatment of phthisis, Robinson, W. D., 574; stamina, the special benefit of fats of one kind or another as a necessary article of diet to fortify the system against tubercle bacilli, Bell, A. N., 574; serum therapy in croupous pneumonia, Wilson, J. C., 630; external drainage of superficial lung cavities, with report of two successful cases, Wills, W. L., 665.

Rheumatism. Pathology of rheumatism, Rieman, D., 669; rheumatism and the prevention of heart complications, Walsh, J. J., 669; the relations of chorea and rheumatism, Burr, C. W., 669; heart in rheumatism, Rochester, Del., 669; pathogenesis and features of arthritis deformans, Kelly, A. O. J., 669.

Richardson, M. H. Ovarian cysts with twisted pedicles, 91; the case of a man who swallowed his suspenders, removal by external esophagotomy, recovery, other similar cases, 158; the methods of closing abdominal incisions, 607; the importance of early operation for biliary calculi, 634.

Ridlon, J. A case of scorbutic spine, 662; the treatment of vertebral tuberculosis with reference to the forcible correction of the deformity, 663.

Rieaman, D. Pathology of rheumatism, 669.

Robinson, B. Minor cases of cardiac dilatation, 550.

Robinson, W. D. Petroleum oil in the treatment of phthisis, 574.

Rochester, DeL. Heart in rheumatism, 669.

Rodman, W. L. Gastric hemorrhage, 586, 604; non-perforating gastric ulcer, with and without hemorrhage, 635.

Roentgen. X-ray examinations of the abdomen, Williams, F. H., 93; the value of x-ray examinations in the less frequent diseases of the chest illustrated by their use in those cases where aneurism is present or suspected, Williams, F. H., 54, 81; note on x-ray examinations of the lung, Williams, F. H., 555; surgical errors of skiagraphy, Beck, C. G., 666; diagnosis of calculous disease of kidney, ureters and bladder by the x-rays, Leonard, C. L., 666.

Rosse, I. C. Malaria and mosquitoes, 628.

Sanatoria for tuberculosis and prophylaxis, 230.

Sanitariums for tuberculosis, 149; local sanitariums for tuberculosis in New York State, 150.

Scabies. The discovery of scabies, 122.

Scannell, D D. The clinical value of Oliver's hemocytometer, 160.

Scarlet Fever. Preliminary report on investigations in the bacteriology of scarlet fever in the scarlet-fever wards of the Children's Hospital, Berlin, Doolittle, W. F., 645.

School. The proper seating of school children, 339; adjustable school furniture, 673; adjustable furniture for schools, 702.

Science pure and science applied, 414.

Scrotum. On the high operation for disease within the scrotum, Mumford, J. G., 89.

Scudder, C. L. The open or operative treatment of fresh fractures, is it ever justifiable? 289, 304; x-ray plates of traumatic separation of epiphysis, 300.

Sea. The influence of sea-air and sea-water on disease, Stewart, W. B., 639.

Sears, G. G., and Bartol, J. W. Report on progress in thoracic diseases, 276, 302.

Serum. The elimination of deleterious substances from antitoxic sera, Park, W. H., 548.

Sex. Determination of sex at will, 231.

Shaffer, N. M. Some of the problems involved in the treatment of lateral curvature of the spine, 629.

Shattuck, F. C. Adenocystoma of the liver, 427; perigastric adhesions causing indigestion and gastric dilatation, 428; perforating gastric ulcer simulating appendicitis, 429; hemorrhage from the whole gastric mucosa simulating gastric ulcer, 430; pyloric stenosis and gastric dilatation from gastric ulcer, hour-glass contraction of the stomach, typhoid fever, perforation, immediate operation, 432; some thoughts on medical education, 529.

Shattuck, G. B., Warren, J. C., and Cobb, F. A study of twenty-four cases of typhoid fever with symptoms of peritoneal infection, laparotomy, 677, 696.

Shoulder. A dislocation of the shoulder explaining the action of Kocher's method, Warren, J. C., 40; a case of old shoulder dislocation, Peckham, F. E., 192; injuries about the shoulder at birth, Stone, J. S., 265.

Skull. Growths in the frontal sinus, Hamilton, W. D., 699; injuries of the skull and its contents, Earles, W. H., 699.

Small-pox. Smallpox in a prevensible disease, 440; pseudo (?) or modified (?) small-pox, Happel, T. J., 640.

Smith, T. Adaptation of pathogenic bacteria to different species of animals, 473.

Smithwick, M. P. Nitrate of silver in hyperchlorhydria, 6, 15.

Societies. American Climatological Association, 571; American Medical Association, 621, 642, 665, 696; Orthopedic Association, 629, 662; American Society of Physiologists, 21; American Surgical Association, 603; Association of American Physicians, 542; Association of Military Surgeons, 613; Boston Medico-Psychological Society, 164, 197, 386; Boston Society for Medical Improvement, 11, 116, 197, 333, 435, 567, 696; International Congress of Obstetrics and Gynecology, 403; International Medical Congress, 177, 314; Massachusetts Medical Society, 641, 660, 675; Massachusetts Medico-Legal Society, 658; New York, Medical Society of the State of, 166; New York Obstetrical Society, 337; New York State Medical Association, 65; Obstetrical Society of Boston, 91, 228, 255, 411; Suffolk District Medical Society, 15, 40, 140, 279, 301, 334, 357, 412, 515.

Sociological status of the physician, Blake, C. J., 482.

Soil. The filtering power of the soil and the conveyance of bacteria by means of subsoil water, 523.

Solly, S. E. The blood changes in high altitudes, 574.

South Africa. War notes from South Africa, 47.

Spine. Typhoid spine, Lovett, R. W., and Withington, C. F., 317, 334; on distortion of the spine, with the report of two cases of diplegia brachialis due to this cause, Courtney, J. W., 345; the mechanics of lateral curvature of the spine, Lovett, R. W., 622, 629; some of the problems involved in the treatment of lateral curvature of the spine, Shaffer, N. M., 629; the relation of deformity of the pelvis to lateral curvature of the spine, Galloway, H. P. H., 629; spasmodic lateral curvature of the spine, Gillette, A. J., 629; the results of my observations in lateral curvature of the spine, clinically, mechanically and pathologically, Phelps, A. M., 629; anterior support supplementing the Taylor brace in Pott's disease, Packard, G. H., 630; a suspension pressure chair for scoliosis, Hoffmann, P., 630.

Spleen. Splenic pseudoleukemia, historical sketch, Cabot, R. C., 421, 435; splenic anemia, Morse, J. L., 422, 436; splenic anemia, Jackson, H., 423, 436; a case of splenic anemia, Jackson, J. M., 424.

Splints. A lecture on surgical splinting, Tracy, E. A., 206.

State Medicine. Oration on State medicine, Vaughan, V. C., 631; the law of dying declarations, Sughrue, M. J., 653, 658; a case of extra-uterine pregnancy, Holyoke, F., 655; the marks produced by pistol shots, Hough, G. de N., 657, 659.

Steam in the treatment of chronic hyperplastic and senile endometritis, putrid abortion and puerperal sepsis, Johnson, F. W., 269, 279.

Stengel, A. Aneurism of the aorta with rupture into the superior vena cava recognized during life, 556.

Sterilizer and equipment for confinement cases, Higgins, F. A., 98, 91.

Stewart, W. B. The influence of sea-air and sea-water on disease, 639.

Stimson, J. C. Diffuse peritonitis from acute appendicitis in a girl thirteen years old, operation, recovery, 163.

Stockton, C. G. Report of a case of acute ascending paralysis, without hematoporphyrinuria, 543.

Stone, A. E. Pelvic gumma, 425.

Stone, J. S. Injuries about the shoulder at birth, 265.

Storer, M. On intermenstrual dysmenorrhea, 397, 411.

Stubbert, J. E. Subsequent history of patients apparently cured by antitubercle serum, 573.

Sughrue, J. M. The law of dying declarations, 653, 658.

Summer, A. F. Homeopathy and the public, 22.

Surgery. The evolution of surgery in London, 147; a personal experience in the teaching of surgery, Burrell, H. L., 565, 568.

Swedish Gymnastics. Physical training and Swedish gymnastics, 390.

Syms, P. The treatment of prostatic hypertrophy, 667.

Syphilis. The transmission of syphilis to the lower animals, 552.

Tabes Dorsalis. On the treatment of pain in tabes dorsalis, report of a case, Lindström, A. H., 37.

Taylor, E. W. A case of poliencephalitis superior and inferior, with acute anterior poliomyelitis, 275.

Taylor, H. L. Retardation of growth as a cause of shortening after coxitis, 664.

Taylor, J. M. Exercises suitable for children suffering from heart disease, 574.

Taylor, R. T. Forcible correction of spinal curvatures followed by paralysis, 662.

Temperature. Some observations on human temperature in disease, Bridge, N., 550.

Tenement House. A model tenement house exhibition, 206; the tenement house and tuberculosis, Knopf, S. H., 233.

Tenney, S. Appendicitis in a hernial sac, 4, 12; anatomical specimens, 333.

Tetanus treated with antitetanic serum, Blake, J. D., 699.

Thayer, A. S. The discovery of the bacillus of influenza, 263.

Thayer, W. S. Cases of diarrhea associated with the presence of strongilus intestinalis in the stools, 548; etiology of malaria with special reference to mosquitoes, 647.

Thomson, W. H. Graves's disease without exophthalmic goitre, 550.

Thorndike, F. Clinical report of cases of infection due to the bacillus aërogenes capsulatus of Welch, 592.

Throat. Malignant disease of the nose and throat, Wright, J., 67.

Tonsil. Sarcoma of the tonsil, Porter, C. B., 297.

Townsend, C. W. Cyanosis from congenital cardiac disease, 426.

Townsend, R. W. Tendon transplantation in the treatment of paralytic deformities, 630.

Townsend, W. The treatment of tuberculosis of the knee-joint, 608.

Tracy, E. A. A lecture on surgical splinting, 206.

Treves, F. The war in South Africa, 151; Mr. Treves's estimate of women at the seat of war, 526.

Trudeau, E. L. Sanitarium treatment of pulmonary tuberculosis and its results, 544.

Tuberculosis. Sanitariums for tuberculosis, 149; local sanitariums for tuberculosis in New York State, 150; State care of tuberculous patients, 168; sanatoria for tuberculosis and prophylaxis, 230; the tenement house and tuberculosis, Knopf, S. H., 233; sanitarium treatment of pulmonary tuberculosis and its results, Trudeau, E. L., 544; report of certain cases of tuberculosis which were apparently due to the nature of the soil, Newton, R. C., 571; educational and legislative control of tuberculosis, Denison, C., 572; some phases of the tuberculosis problem in Colorado, Bonney, S. G., 572; the construction and management of small cottage sanatoria for consumptives, Klebs, A. C., 572; some personal observations on the effect of intrapleural injection of nitrogen gas in tuberculosis, Loomis, H. P., 573; stomach conditions in early tuberculosis, Reed, B., 573; subsequent history of patients apparently cured by antituberele serum, Stubbert, J. E., 573; the phlebitis of advanced phthisis with report of cases of phthisis following abscesses of the hand, Curtin, R. C., 573; the diagnostic value of tuberculin in tuberculosis, Anders, J. M., 573; the hydriatic treatment of tuberculosis, Kellogg, J. H., 574; petroleum oil in the treatment of phthisis, Robinson, W. D., 574; stamina, the special benefit of fats of one kind or another as a necessary article of diet to fortify the system against tubercle bacilli, Bell, A. N., 574; compulsory notification of tuberculosis, 575; the treatment of tuberculosis of the knee-joint, Townsend, W., 608.

Tuttle, J. P. Result of surgery in the aged, 699.

Twombly, E. L. A case of pernicious vomiting of pregnancy, 510, 518.

Typhoid Fever. Typhoid inoculations, 122; typhoid fever and the water supply of Paris, 466; perichondritis of the larynx in typhoid fever, with exhibition of a patient and a specimen, Fussell, M. H.,

550; the attitude of the physician and surgeon to appendicular symptoms complicating typhoid fever, Hare, H. A., 550; a study of twenty-four cases of typhoid fever with symptoms of peritoneal infection, laparotomy, Shattuck, G. B., Warren, J. C., and Cobb, F., 677, 606.

Typhoid Spine, Lovett, R. W., and Withington, C. F., 317, 334.

Urinary System. Recent progress in genito-urinary surgery, Watson, F. S., and Thorndike, P., 63; malignancy in the female genito-urinary system, Baldwin, L. G., 66; stricture of the ureter a possible result of laceration of the cervix uteri, and ureterovaginal fistula a result of trachelorrhaphy, Dudley, E. C., 215, 228; perinephritic abscess involving the appendix, Williams, H., 222; bradycardia, with intermittent albuminuria, Whitridge, A. H., 329; a cystoscope, Pryor, W. R., 337; some points in the diagnosis and management of cystitis in the female, Brothers, A., 337; notes on diabetes: (1) on the occasional low specific gravity of diabetic saccharine urine; (2) on casts in the urine during diabetic coma, Herrick, J. B., 543; a communication on the relation of uric-acid secretion to epileptic attacks, Putnam, J. J., and Pfaff, F., 543; report of a case of acute ascending paralysis, showing hematoporphyrinuria, Stockton, C. G., 543; the origin of oxaluria from fermentation in the gastro-intestinal tract, Herter, C. A., 545; diagnosis of calculous disease of kidney, ureters and bladder by the x-rays, Leonard, C. L., 606; treatment of injuries of the ureter, Davis, B. B., 606; exstrophy of the bladder, with exhibition of a case, Vance, M., 667; surgical asepsis of the urethra and bladder, Valentine, F. C., 667; the treatment of prostatic hypertrophy, Syms, P., 667; the advantages of retained catheter, Eastman, J. R., 700; nephro-ureterocystectomy, Kelly, H. A., 700.

Vaccination. Compulsory vaccination in India, 75.

Valentine, F. C. Surgical asepsis of the urethra and bladder, 667.

Vance, M. Exstrophy of the bladder, with exhibition of a case, 667.

Van Gieson, I. Observations on appendicitis, 550.

Van Zwalenberg, C. Sarcoma of the intestines, 700.

Vaughan, V. C. Oration on State medicine, 631.

Vietor, A. C. A peculiar case of adenocarcinoma of the body of the uterus, 353; the question of supernumerary Fallopian tubes, with specimens of Fallopian tubes with supernumerary ostia, 513, 518.

Vivisection. Human vivisection, 172; vivisection in Harvard Medical School, a reply, Putnam, J. J., 209; some antivivisection "arguments," 231; closing statement for the remonstrants to the Massachusetts House Bill No. 917, entitled "an act for the further prevention of cruelty to animals," before the joint committee on probate and insolvency, March 15, 1900, Ernst, H. C., 619, 650.

Walker, E. W. Strangulated hernia through a traumatic rupture of the diaphragm, laparotomy, recovery, 606.

Walker, H. O. A retrospect of surgery of the stomach, 633.

Walsh, J. J. Rheumatism and the prevention of heart complications, 669.

Walton, G. L. Case of combined superior and inferior poliencephalitis, 109; case of acromegaly, 274; subcortical motor aphasia, 425.

Ward, G. O. A case of relapsing fever, 36.

Ward, R. de C. The relative humidity of our houses in winter, 217.

Warren, J. C. Allis's method of reducing a dislocation of the hip, 40; a dissection of the shoulder, explaining the action of Kocher's method, 40; resection of a portion of the liver for adenocarcinoma of the cystic duct, 276; fresh fractured patella, sutured with catgut through the periosteum, 276; two cases of rupture of quadriceps extensor tendon, 276; perforating gastric ulcer, operation, death, 428.

Wasdin, E. Yellow fever, its nature and causes, 640.

Watson, F. S. Hour-glass contraction of the stomach, 605.

Watson, F. S., and Thorndike, P. Recent progress in genito-urinary surgery, 63.

Weir, R. F. Perforating ulcer of the stomach, 453; perforating ulcer of the duodenum, 605.

Welch, W. H. Venous thrombosis as a complication of cardiac disease, 549.

Wentworth, A. H. A system of clinical instruction, for the simultaneous instruction in small sections of a large number of students, 155; a consideration of the principal objections to "section teaching," together with some of its advantages, 566, 568.

Weybrock, F. F. Varieties of the diphtheria bacillus, 548.

White, J. W. The case method of teaching systematic medicine, 153.

Whitridge, A. H. Bradycardia with intermittent albuminuria, 329.

Willard, De F. Congenital cystic tumor of the pelvis, 608.

Williams, F. H. X ray examinations of the abdomen, 23; the value of x-ray examinations in the less frequent diseases of the chest illustrated by their use in those cases where aneurism is present or suspected, 54, 85; note on x-ray examinations of the lungs, 555.

Williams, H. Perinephritic abscess including the appendix, 222; a case of mural endocarditis, 574.

Wills, W. L. External drainage of superficial lung cavities, with report of two successful cases, 665.

Wilson, J. C. Serum therapy in croupous pneumonia, 639.

Winn, C. H. Bicornate uterus, with twin pregnancy, abortion from one horn, 511, 518.

Wood, H. C. Address on the United States Pharmacopœia, 487.

Wright, A. F., and Leishman, W. B. Typhoid inoculations, 122.

Wright, J. Malignant disease of the nose and throat, 67.

Wright, J. H. Report on progress in pathology, 253; the discovery of the influenza bacillus, 286; the organism and lesions of actinomycosis, 545.

Wyeth, J. A. Colostomy for permanent fecal fistula, 635.

Wyman, M. On medical education, 569.

Yellow Fever, its nature and causes, Wasdin, E., 640.

Address.

WHAT POSITION SHALL UNIVERSITIES TAKE WITH REGARD TO INVESTIGATION?[1]

BY THOMAS DWIGHT, M.D., LL.D., BOSTON,
Professor of Anatomy in Harvard Medical School.

When the honor was done me of asking me to take part in this discussion, my first thought, after the sensation of complacency at the compliment, was that there could hardly be a *discussion* where all held probably very nearly the same views, and that the great difficulty would be to say anything that would not be better said by another. Then as I began to think more carefully, I saw that the question was not, as I had at first imagined it to be, "What shall universities do to encourage those on their staffs to investigate?" It is far wider than that. It comprises a whole group of questions concerning which there may be every shade of opinion. So the more I thought, the more I admired the wisdom the committee had shown in their choice of a subject. Later still, it dawned upon me that surely it is a most satisfactory sign of progress that this Society should meet to discuss such a subject, with the conviction that, though without the shadow of a legal right to make claims, we are, nevertheless, sure of a sympathetic hearing from both universities and the public. First of all let us consider the place of investigation in education as a means of mental training, quite apart from any definite results. Surely this alone opens a wide field for one afternoon's ramble, in which there are diverging and recrossing paths enough to furnish us the surprises of unexpected partings and unhoped-for reunions.

I would here remark that perhaps some confusion is possible from different interpretations of the word, "investigation." According to some, it means simply practical work, object teaching, or, better still, object study. According to others, it is the search for something new. With regard to the value of the former we are all pretty well agreed. We do not need to be told what an advance it is over the old way of learning the statements of others concerning matters well within the sphere of observation. It may sometimes be carried too far; but in view of its great usefulness, we will not quarrel with a little abuse. With what is meant by the second interpretation the case is different. Excepting some singularly gifted natures, it does not, in my opinion, concern the student. The universal or even very general application of this method is the result of an extreme reaction. It rests on a fallacy. Because investigation is a good thing, and worthy of encouragement, which all must admit, it is assumed to be good for all, and an accepted method of education, which conclusion I cannot adopt. It is for the beginner to learn what is worth learning in his particular field first of all. It is not easy in these days to learn all that is worth learning even in a very restricted department. To start on investigation with this only half learned is a direct injury to the student, whom it turns to premature specialization. It is both foolish and cruel to exact investigation as a part of the regular training of every student, and very unjust to imply that those whose taste does not lie that way are mentally inferior to those who dabble in research, no matter how ineffectively. It may be replied that, granting this, still it is a good and necessary training for those who in after life are to become investigators. I incline to dissent still; for the born investigator (and no other is worth much trouble) no more needs encouragement to investigate than the fish does to swim. I would, if anything, restrain him till his education has become broad and his mind mature. He will very quickly more than make up the lost time. Then let him have every encouragement.

As regards education I speak as a professor in a medical school, whose career has been so placed that he has seen this school develop into a department of a university. I feel that, in common with others, it has reached a point when it is in danger from the side of its scientific friends who mistake or will not learn the true purpose of a medical school. I so rarely find myself in complete accord with Huxley that I cannot forbear, though it is not for the first time, quoting his deliberate opinion that whoever adds one tittle that is unnecessary to medical education is guilty of a very grave offence. If this be true, as I firmly believe it is, we must look to it that the candidate for the degree of M.D. be not robbed of his time, none too long for learning medicine as an art, by specially conducted excursions into abstract science. It may be said, and said truly, that without such auxiliaries the education of the student wants something of the breadth which his should have who aspires to stand on the pinnacle, but this only emphasizes the fact, now becoming daily clearer, that there has grown up the need of what may be called advanced medicine. Some would have this strictly post-graduate, but it is probably wiser to have a difference in the course. On the one hand, there is the young man who aspires to be a conscientious, everyday practitioner of medicine, looking forward to a life of hard work among suffering humanity. Such a one is not to be refused the degree of an honored university, and told superciliously to go to the little school round the corner. Neither is he who, looking at the matter more as a scholar, desires through his studies to train himself to teach others and to widen the horizon of knowledge, to be told that we have no help to offer to one of his ideals. We must provide for both, but with what power I have I shall always protest against sacrificing the first to the second, though the latter is the one with whom my tastes incline me to sympathize.

To sum up thus far, I conclude that it is not the duty of universities to urge, still less to force, original investigation upon students. It should be at hand for those whose zeal is so great that it will take no denial.

The next question is what universities should do for research in the community at large. Are more prizes and scholarships to be offered? As to prizes I should hesitate to say yes. It is not well that they should be too common; but of scholarships for deserving men we can hardly have too many. It is most desirable that the universities should award them. They cannot, indeed, give the funds, but these being provided, committees from the universities should give their time, care and experience to their proper administration. This is a most beneficent and dignified attitude for a university, midway between the generous donor and the deserving student, to see that the generosity of the former is neither neglected nor abused.

[1] Address opening the discussion at the Annual Meeting of the American Society of Naturalists and Affiliated Societies, December 29, 1899.

The next, and last, aspect of the question that I shall consider is, What shall a university do for the support and encouragement of investigators within its walls? The primary function, in my opinion, of a professor is to teach; but with certain exceptions of rare merit, it is necessary for his reputation and influence that he should do original work. The first duty of the university to him is that he should not be overburdened with teaching. The next problem is, how the expenses of his work are to be met. These must vary with the department. For some lines of research distant expeditions are requisite, necessarily so costly that they can hardly be provided for otherwise than by national or private munificence. But putting these aside, and speaking more particularly of biological and morphological work, the problem reduces itself to this: what help shall the university give to the investigator, (1) in the matter of providing the material, namely, the subject matter for the study; (2) the machinery and reagents for the work; (3) the means of illustrating it, and finally, of publishing the paper. The last need is not urgent on account of the great number of journals of all kinds, but it exists in isolated cases. Till comparatively recently the position of universities has been much like that of the Pickwick Club, which when sending its honored founder and his companions on their travels saw no objection to every member paying his own bills. But professors for the most part suffer from "that perpetual lack of pence which vexes public men," and those who are not yet professors are, of course, vexed the more. Is it fair that a serious tax ever increasing in direct ratio to his merit should be laid on the investigator, especially as the university profits in no small degree by his success? I am sure we shall all agree it is not. But then difficulties present themselves as to how this help is to be given and distributed, assuming that the university admits the claim. Who are to be the chief beneficiaries? The most distinguished or the most needy? The oldest because of his years? Or the youngest because of his youth? And again, is it just that the university should furnish large sums for bringing out papers of unknown merit? It seems to me that the most feasible way, if the money can be procured, is to place a sum in the hands of the professor at the head of each scientific department, to be spent for the good of that department, including publication, according to his discretion, or his lack of it. Should the latter be painfully apparent, the resulting unpopularity will surely be irresistible, and thus there will be a check on a system which may at first seem too arbitrary.

Original Articles.

EPISTAXIS.[1]

BY FREDERIC C. COBB, M.D., BOSTON.

THE subject of this paper is too much within the experience of all physicians to allow me to hope that I can present many points of novelty and interest not already known to you all. Yet the causes and treatment of this affection are not uniformly considered by the general practitioner and specialist, and each may learn from the other in his treatment of the disease.

[1] Read at a meeting of the Boston Society for Medical Improvement, November 6, 1899.

Bleeding from the nose, to quote from Thomas Watson, may be a warning, a remedy, or a disease. The first two statements, that it is a warning and a remedy, used, I think, to be the idea of the older practitioners, when blood letting, either natural or artificial, was regarded as a panacea for all things. The last part of Watson's statement, that it is a disease, has obtained much more of late years, and is a natural reaction against the earlier practice of blood letting already spoken of. It should in reality be called a symptom, it seems to me, either of some local lesion in the nose, or of some general disease elsewhere. It may be said that cases of nose-bleed are sometimes idiopathic, but as our knowledge of pathology grows, we find fewer instances of idiopathic and more of causative elements previously overlooked.

The causes of nose-bleed may be divided into local and general. Perhaps the commonest local cause of epistaxis is deformity of the nasal septum. The mechanism of the bleeding in such cases is simple. A sharp anterior deviation of the nasal cartilage throws it broadside to the air current, and particles of dust and grit lodge upon the delicate mucous membrane, causing it to become inflamed and covered with a coating of crusts and scabs. These soon become such an annoyance to the patient that he scratches the surface with his finger nail or handkerchief in order to rid himself of the discomfort, thus causing a small ulceration which reaches some time later a blood-vessel and hemorrhage results.

Examination of the nostril shows the vessels on the anterior part of the septum dilated, and if the bleeding point be found, it is within reach of the finger nail of the patient's hand. Ulceration may, however, occur without the use of the finger nail where the surface of the septum is sufficiently inflamed. Epistaxis may occur further back on the septum, but this is more uncommon, and is, it seems to me, more apt to be a symptom of some graver disease. Of the more important local lesions causing epistaxis, fracture is perhaps the most common, and this may occur at the junction of the septum and cartilage, or from the driving in of the nasal bones. Fracture or dislocation of the cartilage is the common cause of bleeding in boxing. Of all lesions the new growths of the nose cause the most severe hemorrhage, especially the angiomata and angiosarcomata. Death has resulted from the former in cases reported by Panas and Richet, but fortunately such cases are rare. In my experience few non-malignant tumors cause bleeding except the angiomata, and even in the malignant growths, except those mentioned, hemorrhage of any severity is unusual. Foreign bodies in the nose seldom cause bleeding, although allowed to remain in the nostril for years. Of the constitutional diseases leading to epistaxis we have first plethora, a somewhat vague expression, and anemia. Epistaxis from plethora I have never seen, although it seems too well known to be doubted. Epistaxis from anemia must be very infrequent in the absence of any local lesions, and in both plethora and anemia one would require proof that no local lesion had existed. If we consider the hemorrhagic diathesis is it not fair to assume that some local break in continuity must exist, as it does in other parts of the body? This of course need be but slight in the nose, as, for instance, the local removal of crusts and scabs from the anterior nares. When we consider that it is only of late years that the nose has been carefully examined, we can easily suppose that slight nasal lesions have often been over-

looked in the report of cases. Curious cases of vicarious menstruation by bleeding from the nose, when the normal channels have been blocked, are recorded, but are of purely physiological interest. Venous hemorrhage from obstruction of the jugular, due to tight stocks or neckwear, are reported, but are to be taken with some reservation. Such stocks were worn by an enormous number of people at one time, and yet it is not claimed that any large number of persons suffered from epistaxis as a result.

Syphilis, phthisis and alchol are given by Browne as predisposing causes. The bleeding in phthisis is rather apt to take place in the posterior nares, and blood crusts seen there are often the only lesion to be found. Epistaxis in syphilis is not frequent, and I have only records of two cases, both from septal ulcerations and associated with necrosis. One of these had also periostitis of the nasal bones.

But there is one constitutional disease which, in my experience, at least, has been associated with epistaxis very frequently, and that is nephritis. This, although mentioned with many others by the books, I do not find emphasized as a common cause. Hemorrhage resulting from this cause is usually severe, since the disease affects the walls of the arteries. In order to put this point in a stronger light I will cite two cases:

Case I. C. D. September 26, 1896, had so severe a hemorrhage from the right nostril that the posterior nares were plugged by the family physician. Twenty-four hours later the plug was removed, but the bleeding at once recurred, and he was forced to replace the plug, which this time was allowed to remain in position for five days. On its removal the bleeding again recurred with as much violence as ever and it became necessary to resort to a third tampon to stop it. I saw the patient after the third tampon had been in position for forty-eight hours. Both anterior and posterior plugs were very foul and were carefully removed, and a ten-per-cent. solution of cocaine on absorbent cotton was placed in the anterior nares. After this had been allowed to remain in the nostril a few minutes it was withdrawn and the nostril carefully examined. A small projecting point on the septum was found and carefully cauterized with a crystal of chromic acid. No further hemorrhage occurred for two weeks, when on cleaning the nostril I accidentally loosened a scab caused by the chromic acid and a quite severe hemorrhage was the result.

This was promptly checked by a plug of cotton soaked in cocaine for a few minutes and a second cauterization, after which no bleeding occurred. As the bleeding point was well back on the septum out of reach of the finger, and as the hemorrhage was severe enough to be evidently arterial, I asked for an examination of the urine, which showed one-half per cent. albumin. Two years afterwards he died of nephritis. The bleeding had been the first sign by which attention had been called to the nephritis.

Case II. D. T., age fifty-four, came to me March 13, 1894, saying that he hawked blood from the posterior nares; lungs negative; no signs in nose or throat to account for hemorrhage. Examination of the urine showed considerable albumin. Nearly a year and a half later I heard that he was dying of Bright's disease.

Other such cases could be cited, but they only serve to show that the urine should be carefully examined in cases of severe nose-bleed. That milder cases may also be associated with the uric-acid diathesis I am sure, and I could cite examples where this has been the case. Enough has been said, however, to point out that cases of epistaxis should receive a good general examination, as well as a local one. The symptoms of epistaxis are too well known to be gone into at any length. Of course, where the origin is the anterior part of the septum, the bleeding is from the nostril corresponding to the lesion. When the bleeding occurs in the mouth the diagnosis of the locality of the lesion is not so evident. It is often a question, in such cases, whether the hemorrhage comes from the lungs or from the nasopharynx or nose. This question is often not easily settled and can only be decided by the presence of a bleeding point in the upper air tract. Sometimes a very sharp deviation in one nostril may determine the direction of the blood backward to the throat, instead of forward to the meatus.

The presence of bloody scabs and crusts in the nasopharynx is fairly good evidence of nasal bleeding, even if no blood has been thrown out of the nose. If there has been severe coughing or vomiting it is possible that the nasopharynx could have been filled with blood from below.

Prognosis. — Experience shows that epistaxis is liable to recur if the exciting cause is not eliminated, just as bleeding in any other locality repeats itself. Even if the vessel causing the trouble is blocked, others become diseased and break, with the same result. Where the bleeding is due to erosion of superficial vessels, caused by crusts and ulcerations of the cartilaginous septum, destruction of the larger vessels and removal of irritation caused by the scabs and crusts, and directions as to how to prevent their again forming, will prevent recurrence. In cases due to a more central disease, that disease should be treated.

Treatment. — The treatment of epistaxis varies much with the severity of the attack. Mild forms may be arrested by simple measures, such as ice to the side of the nose, cold to the spine, hot or cold water injections into the nares. After operations the patient is usually advised to try, in case of bleeding, ice-cold water injected into the nose. Most authors advise a preliminary trial of these simple measures before resorting to the more unpleasant ones. Hot mustard foot baths, ligation of the extremities, pressure of the facial artery, have also been recommended. Practically the most satisfactory procedure is to examine the septum with a strong light concentrated by a head mirror, and, if possible, ascertain the bleeding point on the septum.

The practical difficulties in the case are usually the great amount of blood and clots, which make the examination difficult. For this reason cocaine on pledgets of cotton should be introduced. The solution used should be from five to ten per cent., and should be left in from five to ten minutes. If this fails to stop the bleeding, suprarenal capsule may be used. Until about a year ago this latter agent was almost unknown. Its effect on the blood-vessels of the mucous membrane is almost magical, and it does not seem to injure the delicate lining of the nose in any way. This solution may be prepared from the tablets, or from powders, in about a ten-per-cent. solution. Its only disadvantage when used in operations is that subsequent bleeding may occur.

Pledgets of cotton soaked in a five- to ten-per-cent. cocaine solution should be first tried. These have two advantages — one of contracting the bleeding vessels in the mucous membrane, and the other that of increasing the lumen of the nostril for purposes of packing and making that process less painful.

If a bleeding point is found on the septum, it should be touched with a crystal of chromic acid fused on a probe, or by the galvanocautery heated to a dull-red heat. If this should fail, or a bleeding point cannot be found on account of the bleeding, suprarenal capsule, prepared as above described, in a ten-per-cent. solution may be used, and the bleeding point again searched for. If both these remedies fail, packing must be resorted to, and a few words with regard to the manner of packing may not be amiss. The method of packing, as usually practised, has several disadvantages. This method consists in plugging the posterior nares with a sponge drawn up into the nasopharynx by a stout string, which has been passed in by means of a Bellocq's canula, or a catheter. The anterior nares are plugged for a half inch or so with cotton or gauze. This method depends for its success on rendering the pressure of the effused blood in the nose equal to the arterial pressure. It takes no account of the bleeding spot itself. Its disadvantages are the very great discomfort to the patient of the posterior plug, and the possibility of injury to the ears by its pressure on the Eustachian openings, and the introduction of germs through the packing, which soon becomes foul. It is unnecessary, at present, since with cocaine we can introduce antiseptic gauze in long narrow strips as far as the posterior nares, and beginning at the bottom by strip on strip until the nostril is well packed. The gauze should be introduced with a pair of long forceps, or a notched probe, the first piece being laid along the floor. The gauze should be passed in about three inches, the distance to the posterior nares being measured by a finger in the posterior nares, if necessary. The gauze should be all in one strip for purposes of removal afterwards. The Eustachian prominence is thus left free. The packing should be left in twenty-four to forty-eight hours, and it cannot be too strongly emphasized that it should be put in with great gentleness, and very carefully withdrawn. It will be found that after the gauze has been thoroughly moistened with nasal secretion it can be withdrawn with less danger of pulling off the clots formed by the blood, and thus renewing the bleeding.

To sum up briefly: The causes of bleeding from the nose may be local or general. The local causes are more apt to be ulcerations of the blood-vessels, resulting from scabs and crusts on the septum. These may be caused by irritation, as in deflected septum, by foreign bodies (although this is rare), by new growths, and especially by operations for sarcomata. The general causes are plethora and anemia, the hemorrhagic diathesis, acute febrile diseases, vicarious menstruation and disease of the kidneys, syphilis, phthisis and alcohol. It seems to the writer that the occurrence of severe bleeding should lead to an examination of the kidneys as a cause.

Treatment. — Cauterization of the bleeding point on the septum with chromic acid, or galvanocautery, after cocainization. Suprarenal extract to be tried, its only disadvantage being the possible renewal of the hemorrhage from the reaction of the blood-vessels. Plugging when resorted to should be done by strips of gauze introduced along the floor of the nose by means of long forceps, the Eustachian prominence not to be occluded. Packing should be left in twenty-four to forty-eight hours, and withdrawn with the utmost care.

APPENDICITIS IN A HERNIAL SAC.[1]

BY BENJAMIN TENNEY, M.D., BOSTON.

NOT very long ago I was called to see a patient of Dr. W. L. Watson's, in Lincoln, Mass. She was seventy-nine years old, not vigorous but wiry. The day before, she began to have severe pain in the right groin, some abdominal pain and nausea, accompanied by much general prostration. Her bowels had been more constipated than usual for several days, and she had been eating less. Her tongue was thinly coated, pulse but little more rapid than normal, temperature 101°, and she had attempted to vomit several times.

On examination we found a tender swelling in the right groin, half-way between the pubic and iliac spines and just below Poupart's ligament, about the size of a walnut. It was doughy to the touch, not very movable, and gave no impulse on cough. The skin was not reddened. Six years before, she noticed this "lump" after some extra exertion, but it had never troubled her beyond being occasionally rather tender to pressure. It was not in the least tympanitic, and the abdomen was nowhere tender except just above Poupart's ligament on this side. Thinking it probably an old omental hernia suddenly strangulated, gentle taxis was tried and quickly given up as causing intense pain and doing no good. A large poultice was applied and she was made as comfortable as possible. Next day the symptoms were all decidedly worse, the swelling larger, and she requested operation to get rid of the pain. Considering her age and great prostration I began with local anesthesia, using the stronger Schleich solution. There was much fat under the skin, and there was great difficulty in isolating anything at first, but finally a mass of fat was lifted out, the size of a small hen's egg, which was pretty solid and which had a strong cord-like structure as a pedicle leading down to the femoral ring. My first thought was of a prolapsed ovary with tube attached, but as my thumb penetrated a small cavity, and about a teaspoonful of pus, with characteristic odor, escaped with some small hard masses, I decided that I had an inflamed herniated appendix. It was tied and cut off close to the ring, to which it was tightly adherent. The pain caused by manipulating the pedicle was so intense that a few whiffs of ether were given. The wound was carefully washed out and sewed up with gauze drainage down to the stump, but there was a slight infection of the wound, doubtless from the rupture of the sac, which disappeared in a few days, and her recovery was uneventful otherwise. Three inches of appendix had been removed. The small, hard masses had the exact size and shape of raisin seeds, and with the story of a plum pudding a few days before, I thought I had a double rarity, but Dr. Mallory pronounced them fecal masses.

Hernia of the appendix alone is unusual, though hardly to be called rare. Two lists were published in

[1] Read at a meeting of the Boston Society for Medical Improvement, November 6, 1899.

1895, one of 98 cases by Bajardi, and one of 25 by McAdam Eccles. Since then, Van Hook, of Chicago, has reported one inguinal case, Good and Rose, of London, each one case of femoral hernia, and the writer's is the fourth reported. Not having access to the original paper of Bajardi, I do not know how many cases are included in both his list and Eccles's, but there cannot be many, as Eccles's cases are mostly from London hospital records and museum specimens.

Counting the above four cases with Eccles's 25, we have inguinal hernias, 12, femoral, 16. From Bajardi's table we have inguinal, 57; femoral, 40; obturator, one. The unusually large proportion of femoral hernias is doubtless due to the difference in the distensibility of the two rings. The femoral might admit an appendix and keep out cecum or other intestine, while the internal abdominal ring would more easily dilate and admit them. Were cases of hernia of appendix with other viscera included in these lists, the proportion would be very different.

As to the question of strangulation or inflammation of the herniated appendix, undoubtedly three of Eccles's cases and probably 17 of Bajardi's were simply strangulated, as they were reduced and replaced in the abdomen with complete recovery, but to-day I imagine the rest would be classed as inflamed. In fact, just how much the condition of strangulation, meaning shutting off the circulation, is a cause of the inflammation is a matter to be considered in appendicitis within the abdominal cavity. Certainly the solitary terminal artery supplying the distal end of the tube, particularly when the mesentery extends only half-way out, is liable to compression either by a twist or sharp bend in the tube, by a large concretion within the tube moving to a narrower part during some great exertion, by the swelling of the tissues themselves as a result of some injury or bacterial infection, or by some narrow opening like the femoral or internal or external abdominal rings. When this single artery is blocked, we have every condition required for pus formation: warmth, moisture, bacteria and feebly-nourished cells for them to grow on.

The crises in these herniated appendices present precisely the same symptoms as those seen early in appendicitis within the abdominal cavity, but the tenderness is so sharply localized that it cannot be overlooked. In many cases there is the sudden onset, the nausea or vomiting, the constipation or diarrhea, and the great prostration; but the vomiting is never so severe or persistent or fecal as in intestinal obstruction and the constipation is rarely complete. After pus formation the symptoms and conditions are like those of appendicitis inside the abdomen, only modified by the different anatomical conditions. In Hall's case after three days the hernial sac and most of the abdomen were found full of pus, and the appendix gangrenous and perforated within the sac. This occurred in eight cases. In one of Eccles's cases a bone splinter came out through a fistulous opening in the groin. Dr. Fitz's article mentions a case of Dr. A. T. Cabot's with a fistulous opening into the appendix in the groin. Van Hook's case was a cystic appendix, ruptured into the abdominal cavity during taxis. Dr. Monks's case was supposed to be a scrotal abscess. They have been diagnosed as suppurating glands, as omental hernias, as hernias of the ovary, and as new growths. In fact, the correct diagnosis has never but once been made before operation, and then a patient who had been cured of a supposed abscess of the testicle returned to the same clinic with a solid cord in his scrotum.

The length of time these appendices have been herniated with no special symptoms is also interesting as bearing on the question of tenderness of the normal appendix, but is not very easily found. Hall's case was seventeen years old, and the hernia had existed since childhood, with no truss worn or symptoms mentioned till the attack. Annandale's case existed twenty years, no truss worn, no symptoms mentioned. Monks's case was an infant with slowly growing tumor of two months. Rose's case had existed thirty-eight years, and had been accompanied by occasional vomiting and general dyspeptic symptoms, entirely relieved by operation. One of Eccles's cases had existed eleven years, and another eight months. The writer's case had been herniated six years, and was also accompanied by irregularity of the bowels, occasional attacks of indigestion and abdominal pain, all naturally referred to other causes, and all relieved since operation.

These appendices were all much more exposed to pressure than in the normal situation, and yet there is no record of constant tenderness. For some time I have made it a routine practice in examining patients to locate and palpate the appendix whenever possible, and have found what I thought to be appendix in some 60 cases. In only four of these was more tenderness than was shown to the same deep pressure on the other side. I do not believe that the normal appendix is ever more painful on pressure than any other part of the abdominal contents. But it is easily conceivable that a large concretion distending the tube, or a raw infected spot within the tube, or a kink or bend in the tube, might cause sufficient pressure on the nerve ends to produce tenderness and the lesser reflex symptoms of irritation of the mesenteric nerves. That there is a very active reflex of this sort is sufficiently proved by the grave symptoms which always follow strangulation of an omental hernia, and which cannot be accounted for in any other way.

Dr. Fitz in his original paper of 1886 remarked, after describing some cases where the appendix after death showed decided pathological changes, and where no severe abdominal symptoms had ever been recorded, "The severity of these lesions suggests the probability that apparently slight disturbances of digestion were overlooked. The diarrhea, constipation or abdominal pain, especially when occasionally recurrent, were regarded as characteristic of a feeble digestion."

More than that, I believe that the "acute indigestion," sometimes put down as the immediate cause of an attack of appendicitis, is often simply the first symptom of pressure on these sensitive nerve ends, and that with care the tenderness can be made out long before there is a tumor, and the case then be intelligently watched for interference at the opportune time. While, to-day, we are usually able to recognize a well-developed case, and do not often permit patients to recover or die with a wrong diagnosis, there are many who neither recover nor die, but live on uncomfortably, enduring some form of indigestion, never feeling perfectly well and with a constant danger ahead, who might be much more useful and pleasant members of society if the reflex symptoms and tenderness of an abnormal and irritating appendix were discovered and appreciated by their medical adviser.

REFERENCES.

Fitz. Transactions Association of American Physicians, June, 1886.
Hall. New York Medical Journal, vol. i, p. 543, 1886.
Annandale. Lancet, vol. i, p 627, 1889.
Monks. Boston Medical and Surgical Journal, vol. i, p. 543, 1890.
Rose. London Lancet, June 20, 1896.
Eccles. St. Bartholomew's Hospital Report, 1896.
Van Hook. American Gynecological and Obstetrical Journal, 1896.
Good. London Lancet, October 1, 1898.

NITRATE OF SILVER IN HYPERCHLORHYDRIA.[1]

BY M. P. SMITHWICK, M.D., BOSTON.

My experience with hyperchlorhydria has been in nervous temperaments, although not always nervous according to the popular acceptance of the term. In some cases, especially those with atony or gastrectasia, mucus has been present in considerable amount, but the burden of proof would rest heavily on one attempting to prove them other than neuroses. In particular, I recall a heavy drinker who presented the clinical picture of gastric catarrh, except that there was a history of burning pain coming on some time after meals but relieved by food. It was not very troublesome just at that time. The man had been treated for alcoholic gastritis in a hospital some months previously, but since then had been totally abstinent.

One hour after 30 grammes of bread and 300 c. c. of water had been given, free HCl was .18 per cent. and total acidity .25 per cent. The greenish contents contained much mucus. Twenty-five c. c. of filtrate required over five hours to dissolve .05 gramme of the white of hard-boiled egg at 40° C. Two days later an analysis gave the same results. Lavage sharpened the appetite, improved the catarrhal symptoms, and increased the burning. One week from the first analysis an examination under identical conditions gave 145 c. c. of contents, slightly greenish in color, with considerable mucus. Free HCl, .241 per cent.; total acidity, .31 per cent. Digestive test required three hours, the normal period. In other words, we were clearing up a gastric catarrh which obscured the usual condition, hyperchlorhydria.

The severity of subjective symptoms is not a reliable index of the degree of acidity in different cases nor in a given case at different times. It may be marked, and the acidity within normal limit. This points to hyperesthesia, which seems to be present in these cases. On the contrary, a great increase in the acidity is usually attended by a corresponding aggravation of symptoms.

In a given case, if the environment can be so controlled as to give the greatest nervous relaxation and avoid nervous tension, the prognosis is better. In short, to do the best for these sufferers, frequently one must treat them as neurasthenics. He must understand them, their history, their daily lives, so that he can assist them to live without unnecessary expenditure of nervous energy and encourage to healthy activities. How difficult this problem, where change of environment is impossible, is known to us all. On the whole, proteid diet has been most suitable, especially in bad cases. Raw eggs between meals have been very helpful in certain cases.

[1] Read before the Suffolk District Medical Society, Section for Clinical Medicine, Pathology and Hygiene, October 18, 1899.

We have found medicinal treatment discouraging as regards cure. Of local remedies, alkalies, bismuth and nitrate of silver have been tried. Of remedies intended to act through the nervous system, nux vomica and bromide. Nux vomica has seemed to decrease the percentage of acid in certain cases and improve the motility, but has increased the discomfort, except in one case, and there the result was quite brilliant. I will refer to the case briefly:

A man thirty-one years of age, with an excellent family history and past history, has been engaged in exacting mental work for several years. He occupies a very responsible position and has acquired the pernicious habit of devoting his meal times to mental work and, at the same time, satisfying completely a never-failing appetite. For three years a history of digestive disturbances. About an hour after taking food, especially at noon, he experienced a burning sensation, distention and belching, and most annoying of all, a sensation of weight, as if the stomach did not empty itself. This would last almost or quite to the next meal. Occasionally it would be present all the forenoon and recently several times late in the forenoon he has vomited his breakfast. Acid things and pastry increased the burning. Bowels irregular. Frequently a restless night. Lost much weight. Recently a trembling of the hands had annoyed him.

Physical examination. — Expression troubled and careworn. Chest, negative; abdomen prominent. Right kidney easily palpated. Stomach in normal position. Distended with CO_2 its lower border was one and one-quarter inch below umbilicus. Filled with water its lower limit was two and one-quarter inches below umbilicus. When slightly distended with gas or containing a small amount of water the stomach was considerably smaller, being markedly atonic but only moderately dilated.

Nux vomica was given and the dose gradually raised from 10 drops three times daily to 20. Habits, exercise and diet were regulated. Improvement was prompt. Treatment commenced early in May, and by August, when he started for a bicycling trip on the Continent, the gastric symptoms had nearly disappeared. At that time the stomach was empty six hours after a mixed meal given in the morning, although the salol test gave negative result at two hours and positive at thirty and a half hours. The acidity was moderately reduced under treatment, as judged from five analyses, and motor power improved. Early in September my patient wrote that there were no digestive symptoms, and to-day I received the same report.

From a practical point of view, control of subjective symptoms is the chief object of treatment. In this connection I wish to give a limited experience with nitrate of silver. I have not attempted a review of the literature on the subject. Riegel [2] recommends its trial in severe cases. It is to be given by mouth, or the stomach washed out with a solution (1–1,000), and this in turn followed by thorough washing with water. Nitrate of silver has been tried in three of my cases. In two, one-quarter grain in one-half ounce of distilled water was given twenty minutes before breakfast. One case is doing well. The other reported some improvement after two weeks, but it seemed as likely due to diet, regular exercise, and a more rational mode of living. From the fasting stomach in the morning I then obtained 10 c. c.

[2] Nothnagel's Sp. Path. und Ther., xvi.

of fluid with about .1 per cent. free HCl. The conversion of nitrate to chloride presumably caused the failure. Where there is continuous secretion of acid gastric juice thorough lavage should precede the administration of silver nitrate. This precaution is manifestly necessary, but I have not seen it mentioned. If lavage is impracticable we depend on bismuth and alkalies instead of silver nitrate. The neutralization of the acid instead of lavage will occur to everybody, but there is no means of judging the amount of alkali necessary. An excess of bicarbonate of soda, for instance, would convert the nitrate of silver into the oxide without local action, according to the equation: $AgNO_3 + Na_2CO_3 = Ag_2CO_3 + 2NaNO_3 = Ag_2O + CO_3 + 2NaNO_3$. Where the fasting stomach contains acid juice the equation, is, of course: $AgNO_3 + HCl = AgCl + HNO_3$, and in our experience the treatment fails.

Mrs. S., thirty-six years of age, consulted Dr. W. N. Bullard, December 6, 1898, and he kindly referred her to me.

F. H. Negative, except that three sisters have "weak stomachs."

P. H. In Massachusetts General Hospital nine years ago with pelvic abscess, and while there vomited blood during two days; was menstruating. Five years ago, Dr. H. O. Marcy removed the appendages for double pus tube. Recently Dr. Marcy kindly wrote me that he considered it a case of gastric ulcer. For a year after the operation she menstruated a little each month and then none for three years. In these nine years, and especially during the three when menstruation was absent, the patient vomited "coffee grounds" and bright blood frequently. The hematemesis occurred, so far as she could judge, when menstruation would naturally have occurred. Much of the past nine years has had heartburn and sour stomach. During an attack of hematemesis and the two or three preceding days, her stomach would feel as if it contained "live coals." For three or four years has drunk two cups of hot water morning and evening and vomited. It has given the greatest relief and she "couldn't get on without it." Food and tea relieve the burning pain. Very constipated. Eight weeks ago, menstruated one day, and for seven weeks the water vomited morning and evening contained "coffee grounds" and some bright blood. For a week, vomitus very acid, but not bloody. Burning continues. Not subject to epistaxis.

Physical examination. — Well developed, fairly nourished. Face, tongue and mucous membrane of mouth pale. Expression drawn. Pupillary and other reflexes normal. Repeated laryngoscopic examination failed to show any source of bleeding. Remainder of examination negative, except moderate epigastric tenderness with one very tender point in extreme left of epigastrium. This point had been tender whenever blood was raised. Lower border of stomach distended either with air or water reached a little below umbilicus. Position of stomach normal.

Analysis No. 1. — One and one-quarter hours after a test meal of bread 70 grammes, water 300 c. c., amount contents 150 c. c., containing a small amount of brown material assumed to be digested blood. No chemical test made and no blood corpuscles seen in microscopic examination. Free HCl, .15 per cent; total acidity, .27 per cent.

Patient was in bed three weeks on diet of peptonized milk and there was almost an absence of symptoms. Milk was peptonized because otherwise it seemed to cause distress, and several times was vomited in thick curds. Also, it was hoped that more acid might be combined, as Professor Chittenden has shown to be the case with peptones. During the fourth week she commenced to sit up; burning pain with frequent headache returned; and, as formerly, she found temporary relief by drinking two cups of hot water morning and night and vomiting. During this week a thorough trial was given the "gastric sedative" mentioned in the article on this subject in the "American System of Practical Medicine," consisting of two parts, by weight, of cerium oxalate, four parts of bismuth subcarbonate, and eight parts of light carbonate of magnesium. The relief was so temporary that my patient pronounced its further administration useless and asked to be excused from bothering with it. The diet had been increased only by the whites of eggs.

January 7th. Tincture nux vomica was commenced in ten-drop doses and gradually increased.

January 8th. There commenced at noon an unusually severe attack, consisting of headache, gastric distress, a strangling sensation, vomiting, and occasional darting pains referred to the stomach. In the afternoon I siphoned out the remains of one-half glass of peptonized milk drunk two hours before, and then washed out the stomach thoroughly. There was no blood. The analysis was: Free HCl, .226 per cent.; total acidity, .387 per cent.

Until March 14th the headaches were frequent. The burning sensation was severe and persistent, being relieved temporarily by the hot water and by food. Raw eggs taken between meals gave temporary relief. By successive trials, the largest dose of nux vomica to be tolerated was determined. The maximum dose was reached gradually and maintained while practicable, as judged by the nervous symptoms. Then it was reduced gradually and gradually re-established after the unpleasant symptoms had disappeared. The gastric symptoms were not relieved by the nux vomica, while the patient was much more nervous than before its administration. The outlook seemed discouraging. The history of successive attacks of hematemesis during nine years, and the sharply localized point of tenderness, which had been the same in all attacks, pointed strongly to a recurrent ulcer. Vicarious menstruation could be excluded fairly after the seven weeks' duration of the last hematemesis. In view of the almost continuous suffering from acidity for nine years, I seriously considered the advisability of an exploratory operation with a view to excision of the ulcer scar.

In one of the medical journals, I noticed nitrate of silver recommended for gastric irritability with or without ulcer; one-fourth grain was to be administered in one-half ounce of distilled water twenty minutes before breakfast, or the stomach was to be washed out with a solution (1-1,000) and that followed by a thorough washing with water. (I regret that I am unable to give the reference. It was to some digestive work.) Already lavage had been substituted for drinking and vomiting hot water. After lavage each morning, with occasional omission of two or three days, one-fourth grain of silver nitrate in one-half ounce of distilled water was poured through the tube. At this time the gastric symptoms were overshadowed by a train of symptoms commencing some days before the administration of silver nitrate, namely, frequent desire to micturate and some pain. Twenty-four hours' amount

of urine was 18 ounces, and a few days later only 11 ounces. Later, what was apparently renal colic supervened. Patient was put to bed on milk diet. As the urine remained scanty in spite of diuretics, Dr. Ogden examined and reported no evidence of renal disease, confirming the result of my own analysis.

During the three weeks' confinement to bed lavage seemed impracticable, and as bromide was indicated for the patient's nervousness, it was pushed for a possible beneficial effect on the gastric symptoms. The latter were not improved, and April 15th lavage and silver were resumed, and, with an occasional precautionary omission, have been continued to date.

May 3d. Dr. Quackenboss ordered glasses for a moderate degree of hypermetropic astigmatism.

May 5th. One hour after bread, 35 grammes, water 300 c. c., the amount of stomach contents was 45 c. c. There was previous lavage. Free HCl, .248 per cent.; total acidity, .321 per cent.; 25 c. c. filtrate dissolved, .05 gramme of white of hard-boiled egg in three and one-sixth to three and one-half hours at 40° C.

At this time the symptoms were not very marked and steadily diminished, being absent during June, July, and until August 20th. For two months before the latter date all restrictions on diet were disregarded by the patient. She fairly revelled in fresh tomatoes with pepper, vinegar and salt, stewed tomatoes seasoned with pepper, pickles, sour apples and grapes. I never saw her so happy as one day after she had eaten, without symptoms, a boiled dinner and a sour apple. She gained in weight and spirits.

August 7th. The fasting stomach contained 30 c. c. of yellowish-green fluid, acid to litmus. Free HCl, absent; total acidity, .066 per cent. Bile absent. This was the usual amount of fluid removed in the morning before breakfast. A test meal of 30 grammes of bread and 300 c. c. of water was then given and in one and one-sixth hours 110 c. c. removed, not remarkable in appearance. Free HCl, .102 per cent.; total acidity, .219 per cent.; lactic acid, a trace; filtrate, erythrodextrin; microscopic, yeast and nothing else to note; digestive test, four hours, twenty-seven minutes, at 39° to 40°. The stomach, filled with water, reached to within one and three-fourths inches of the umbilicus, being decidedly smaller than in December. Also, in order to empty the stomach completely, it was necessary to pass the tube a less distance.

August 20th. Headache, nervous, tender breasts, a sleepless night. No gastric distress.

August 21st. Ate tomato soup for supper, vomited in the night, and in the morning washed from her stomach some of the soup. June 13th, in the morning, the stomach had contained banana eaten the previous evening. These were the only times that macroscopic remains of food were present before breakfast.

August 29th. The fasting stomach this morning contained one ounce of yellowish-green fluid and some mucus. No macroscopic food remains. Free HCl, .113 per cent.; total acidity, .212 per cent.; filtrate, no reaction with IKI; digestion, three and two-thirds hours Microscopically, no blood, few starch grains, as shown by their appearance and behavior to IKI. No muscle fibres. Much pavement epithelium, one small clump of columnar epithelium, with quite frequently a polynuclear leucocyte and occasionally a salivary corpuscle.

August 29th. One hour after bread, 30 grammes, water, 300 c. c., amount contents, 72 c. c. Appearance and odor not remarkable. Free HCl, .212 per cent.; total acidity, .277 per cent.; lactic acid, absent; filtrate, erythrodextrin; digestion, four hours. Microscopically, no blood, yeast not increased and nothing of importance.

September 16th. Patient reported that the acidity had been somewhat troublesome since August 20th, three weeks. Incidentally, she remarked that she felt some burning at that moment, and I allowed her to siphon out her stomach contents. Three hours previously she had eaten, among other things, fish chowder and stewed tomatoes. The amount was 88 c. c. Free HCl, .303 per cent.; total acidity, .526 per cent.; lactic acid, absent; digestion, four hours.

September 26th. Patient reported that the acidity was very troublesome from the 16th to the 22nd of September, but since then less troublesome. The dose of silver nitrate was increased from one-fourth grain to one-half grain September 20th. Marked amelioration of symptoms was noted by the 23rd, and three days later a return to one-fourth-grain dose seems justifiable. This morning two ounces of yellowish-green fluid was siphoned from the fasting stomach. Free HCl, .146 per cent.; total acidity, .248 per cent.; digestion, three and three-fourths hours; lavage to-night.

September 27th. Same amount of fluid and of same appearance. Gastric symptoms still improving. Free HCl, .19 per cent.; total acidity, .26 per cent.; digestion, three and one-half hours; lavage to-night.

September 28th. Comfortable yesterday and perfectly comfortable this morning. Fasting stomach contained two ounces of colorless fluid. Free HCl, .314 per cent.; total acidity, .380 per cent.; digestion, three hours, fifty-two minutes. After lavage, gave test meal of bread, 30 grammes; water, 300 c.c. Amount of contents in one hour, 48 c. c. Free HCl, .27 per cent.; total acidity, .34 per. cent.; filtrate, erythrodextrin; digestion, three and one-fourth hours; lavage at night omitted.

October 4th. Since last analysis not much discomfort. Yesterday patient ate roast lamb at 4 P. M. and lamb stew at 8.30 P. M. This morning, fasting stomach contained two ounces plus of yellowish-green fluid with more sediment than usual, but no macroscopic food remained. Free HCl, .242 per cent; total acidity, .329 per cent. Microscopically, occasional striated muscle fibre and starch grain. No blood. Considerable pavement epithelium. Few yeast cells. Frequently a salivary corpuscle.

October 11th. Almost no discomfort since last analysis. Perfectly comfortable at present. Cold boiled ham and bread for supper yesterday. This morning, fasting stomach contained 10 c. c., acid to litmus, giving a faint brown with Congo-red paper; no reaction for free HCl. Total acidity, .095 per cent. Microscopically, no muscle fibre, rarely the remnant of a starch grain, as shown by IKI; frequently a polynuclear leucocyte, showing the entire cell, and a salivary corpuscle. Considerable pavement epithelium.

The case is apparently under control again, or quiescent.

The disadvantage of this form of treatment in the presence of continuous secretion is the necessity of using a stomach tube. In the case just reported lavage in the morning was done by the patient with

satisfaction. Also we must remember the possibility of argyria and omit occasionally.

Besides these three cases I have followed this treatment in a few cases in the practices of friends. So limited an experience is not convincing to me, but suggests the advisability of giving the treatment a thorough trial. Apparently it has markedly diminished the gastric sensitiveness in two of my cases, whether or no it has affected secretion of acid.

I trust that my experience may be supplemented by the favorable or unfavorable experience of others present, and may lead some to assist in determining the value of silver nitrate in hyperchlorhydria.

A SIMPLE METHOD FOR THE QUANTITATIVE ANALYSIS OF THE GASTRIC CONTENTS FOR USE IN CLINICAL WORK.

BY HENRY F. HEWES, M.D., BOSTON,

Physician to Out-Patients at the Massachusetts General Hospital and at the Carney Hospital, Boston; Assistant in Chemistry at the Harvard Medical School.

In my article upon the analysis of the gastric contents published two years ago in the JOURNAL, I suggested certain modifications of the Töpfer method of quantitative analysis of the contents, which was at that time the most practical method of analysis for use in clinical work.[1] These modifications were:

I. The addition of a second test for free hydrochloric acid which could be utilized at the same time as the dimethyl test of Töpfer and serve as a control test to ensure a more accurate record on this point.

II. The substitution of the Congo-red test for the alizarin test in the estimation of the total organic acids plus acid salts.[2] Experience had proven to me as well as to many others,[3] that accurate readings with this dimethyl test and the alizarin test uncontrolled were in gastric contents often impossible and I sought by these modifications to remedy these weaknesses in the original Töpfer method. During the last two years I have succeeded by attending to these modifications in developing and approving by extended use a quantitative method of analysis, at the same time more accurate and more simple than the original method, or the method as first modified by me. The details of this new method are as follows:

I. *Total free HCl.* — Measure off five cubic centimetres of contents after shaking. To this five cubic centimetres of the unfiltered contents in a test tube add a few drops of Töpfer's reagent (a one-half-per-cent. alcoholic solution of dimethyl-amido-azo-benzol). If free hydrochloric acid is present, the mixture will assume a carmine-red color. As a rule, where the acid is present, one drop will give the clear red color. In some cases, however, the addition of three or four drops is necessary.

To this red mixture a decinormal solution of sodic hydrate is added by titration until the red color gives place to an orange or bright yellow color. The number of cubic centimetres of the soda solution necessary to bring about this result are then read off. By multiplying this number by .00365 gramme, the amount of free hydrochloric acid in the five cubic centimetres of contents is obtained and from this record the grammes of free HCl per hundred (per cent.) or per thousand may be reckoned. As it is sometimes difficult to determine the exact point at which the red color disappears in this titration, it is well to control this test by another more delicate test for free HCl. When enough soda has been added to leave but a very faint red color in the mixture, a drop of the mixture should be mixed upon a white evaporating dish with a drop of a saturated alcoholic solution of 00 tropeolin, and the dish warmed (not heated intensely) over a flame. As long as such a mixture gives a purple color upon evaporation, the free hydrochloric acid in the contents is not yet neutralized. When the purple color fails the acid is neutralized. By thus depending upon the Töpfer test until near the end of the reaction and upon the tropeolin for the last steps, we obtain a very accurate quantitative estimation of the free hydrochloric acid.[4] For rough work, for results within .01 per cent. of the accurate result, the Töpfer test suffices.

II. *Total free acids plus acid salts.* — To the same five-cubic-centimetre mixture of gastric contents in which the free hydrochloric acid has been neutralized continue to add the decinormal soda solution until a drop of the mixture fails to color Congo-red paper (paper prepared by dipping filter paper into a five-per-cent. aqueous solution of Congo red and drying). When the mixture fails to color the Congo paper, all the free acids, organic and mineral, also the acid salts (acid phosphates), are neutralized. By taking the record of the soda used up to this point the quantitative estimate of the total free acids plus acid salts in the contents can be obtained in the same manner as in the estimation of the total free HCl. If in performing this Congo test the reaction point is passed, the paper is turned a brighter red than its original color. It is thus easy to control the accuracy of this test.

III. *Total acidity.* — To the same five-cubic-centimetre mixture of contents in which the free hydrochloric acid and the other free acids and acid salts have in turn been neutralized add two drops of a one-per-cent. alcoholic solution of phenolphthalein. Continue to add the soda solution until a deep red color of maximum intensity is obtained. The appearance of the deep red color indicates the presence of an alkaline reaction, that is, that the neutralization of all the acid elements of the contents is accomplished. From the record of the soda solution used to accomplish this result we estimate the total acidity. Care must be observed in performing this last step of the estimation to develop the deepest red color which can be obtained. As long as the top of the mixture takes a deeper color after the addition of a drop of the soda than the rest of the mixture the end reaction has not been obtained.[5]

This analysis gives us a qualitative test for free hydrochloric acid, and a quantitative estimation of the total free hydrochloric acid, the total free acids plus acid salts, and the total acidity. By subtracting the total free HCl (I) from the total free acids plus salts (II) we obtain a quantitative estimate of the total organic acids plus acid salts (IV). By subtracting

[1] Boston Medical and Surgical Journal, November 25 and December 2, 1897.

[2] Töpfer: Zeitschr. f. physiolog Chemie, 1894, Bd. xix, H. 1, S. 104.

[3] Mohr: Loc. cit., H. 6, S. 67; Hari: Archiv f. Verdauungskrankheiten, Bd. ii, H. 203; Strauss: Deutsches Archiv f. klin. Med., Bd. lxvi, H. 1; Hewes: Boston Medical and Surgical Journal, November 25, 1897, p. 540.

[4] The tropeolin test is used as it gives no color reaction with the Töpfer reagent; phloroglucin vanillin gives a red color with this reagent even in the absence of free HCl.

[5] Owing to mechanical obstruction some of the acid in the particles of contents is not at once neutralized by the acid, so that enough extra soda to give the deep red color – combine with all the phenolphthalein is added to allow for this acid. Upon standing well stoppered, the mixture turns a fainter red as the hidden acid is liberated.

(II) the total free acids plus acid salts from (III) the total acidity, we obtain the total combined acids (the total combined HCl in cases where free HCl is present) (V). By adding this total combined HCl (V) to the total free HCl (I) we obtain the secreted hydrochloric acid (VI).[6]

This analysis can be accomplished in five to ten minutes. It necessitates for apparatus a burette, an evaporating dish, a lamp, a test tube and a glass rod. The necessary reagents are (1) A decinormal soda solution; (2) one-half-per-cent. alcoholic solution of dimethyl-amido-azo-benzol; (3) Congo-red paper — filter paper soaked in a five-per-cent. aqueous solution of Congo red; (3) a one-per-cent. alcoholic solution of phenolphthalein; (4) a saturated alcoholic solution of 00 tropeolin. The estimations should be made twice, and the records of the tests with the second mixture of contents taken as final. For this estimation is made with an approximate idea of the results to be obtained already in mind, so that there is less waste of material in the process. The simplicity of the method admits of the employment of this quantitative analysis of the gastric contents as a routine method of diagnosis in private practice and in out-patient hospital work without undue sacrifice of time or labor.

In cases in which free hydrochloric acid is present to the Töpfer test, this analysis includes, with the exception of the qualitative test for lactic acid,[7] all the tests which are necessary in ordinary clinical work. Where the Töpfer test is absent or doubtful the qualitative test for free HCl must be tried with 00 tropeolin, Boas resorcin reagent and phloroglucin vanillin. Where a trace is discovered by one of these tests which could not be determined by the Töpfer test, the amount present is recorded as a trace, it being too small to admit of a definite quantitative determination.

Methods of analysis in cases with no free HCl; qualitative test for combined HCl. — In cases in which no free hydrochloric acid is present by any of the qualitative tests the contents are first tested with Congo-red paper. A positive test shows the presence of free acids (in this case organic acid) or of acid salts or of both. Five cubic centimetres of the contents is then estimated with the soda solution against Congo red (II) and phenolphthalein (III) in turn, and the total free acids plus acid salts and the total acidity determined.

If no free acids plus salts are present the contents are first tested with blue litmus. If the test is positive the presence of combined acid of some kind, either mineral or organic, is proven. Five cubic centimetres of the contents is then estimated against phenolphthalein to determine the total acidity (III).

In cases in which no free hydrochloride acid is present and the contents are still acid, it is of much importance to determine whether or not the combined acid present or a part of it is combined hydrochloric acid. For by this determination we ascertain whether or not any hydrochloric acid is secreted; that is, whether the acid-secreting cells of the stomach suffer from a total loss of function or a simple diminution of this function below normal. This fact may be ascertained in a simple manner by subjecting the contents to the qualitative test for chlorine. except that present in the form of inorganic chlorides, known as the Ewald-Sjoqvist test.

VII. *Test for combined hydrochloric acid in the absence of free hydrochloric acid.* — Ten cubic centimetres of the contents is mixed with a pinch (half a saltspoonful) of barium carbonate. This mixture is evaporated and the residue fused to a red heat in a platinum crucible (fused to a red heat only). The fused mixture is treated with boiling water. The mixture is filtered. The filtrate and wash-water together should amount to about 30 cubic centimetres. To this filtrate (cooled) from five to ten cubic centimetres of a saturated solution of sodium carbonate is added. If chlorine in the form of organic chlorine compounds (acid albumins, peptones) is present in the original mixture a white precipitate will form in this filtrate.

When this barium carbonate test is positive, then we know that some of our combined acid is combined hydrochloric acid and that the disturbance of the secretion of acid present is due to a diminution rather than a total loss of function of the secreting cells. This is a fact of considerable importance in our knowledge of the case. This Ewald-Sjoqvist test is very simple. It occupies about half an hour. It necessitates for apparatus a platinum crucible and a Bunsen lamp. The necessary reagents are, (1) barium carbonate CP; (2) saturated aqueous solution of sodium carbonate. All methods of quantitative estimation of the total combined hydrochloric acid in the absence of free hydrochloric acid, which are of sufficient accuracy to be of use, are too difficult of application for use in ordinary clinical work.

I have employed the above plan of analysis as a routine method in all cases of gastric affections in my out-patient clinics for two years. The results from the point of view of diagnosis and of therapeutics and of acquiring a more thorough understanding of the disorders of the stomach have amply repaid the labor.

[6] This total hydrochloric-acid record is the index of the secretory force of the stomach, much more accurate than the record of total acidity or total free HCl.

[7] To test for lactic acid two cubic centimetres of the filtered contents is added to five of a colorless solution of ferric chloride. If this test is negative lactic acid is absent. If the test is positive (if a lemon-yellow color appears in the ferric-chloride solution) the test must be confirmed by performing this ferric-chloride test with an ethereal extract of the contents. If this test is positive, lactic acid is present. If it is negative, the color in the preliminary test was due to some substance other than lactic acid.

Clinical Department.

THREE UNUSUAL CASES OF ANGIONEUROTIC EDEMA IN INFANCY.[1]

BY JOHN LOVETT MORSE, A.M., M.D., BOSTON,
Assistant Visiting Physician at the City Hospital and Assistant Physician at the Infants' Hospital, Boston; Assistant in Clinical Medicine, Harvard Medical School.

ALTHOUGH angioneurotic edema is occasionally met with in infancy it certainly cannot be regarded as of common occurrence. The usual seats are the lips and cheeks or the external genitals. The extremities are seldom involved. The location of the swelling and the apparent cause in two make the following cases of unusual interest:

CASE I. Constance M., twenty-three months, woke up on the morning of March 9, 1898, with her left arm moderately swollen. It was not painful and she

[1] Read before the Suffolk District Medical Society, Section for Clinical Medicine, Pathology and Hygiene, October 18, 1899.

used the arm freely. There had been no known injury or exposure. The swelling of the forearm increased during the day and the next morning the hand was also much swollen. She was otherwise perfectly well.

I first saw her at this time. The left forearm and hand were much swollen from the elbow to the second phalanges. The surface was somewhat reddish and a trifle hot. There was moderate pitting on pressure. There was no tenderness and she used the hand and arm freely. There was no lesion of the surface and no enlargement of the axillary glands. The pulse was normal. The arm was bandaged loosely, and on March 12th, four days from the onset, the swelling had entirely disappeared. There has been no recurrence.

Case II. Ruth B. was seven months old November 5, 1897. One morning, about this time, her mother came in from a walk and gave her her morning bath. Being in a hurry she tested the temperature of the water with her hand. It was later found to have been much colder than usual. The child cried vigorously and when taken out was shivering and blue. She soon warmed up again, but about an hour later it was noted that both her forearms and hands were swollen, bluish and cold.

I saw her soon after. As stated above, both forearms and hands were much swollen and slightly cyanotic. The skin was shiny and there was no pitting. The surface was rather cool. There was no tenderness or pain and the arms were moved freely. There was no enlargement of the axillary glands and the radial pulse was normal. The heart and urine were both normal.

The swelling disappeared, without treatment, in two days. A few weeks later, however, it recurred, evidently as the result of sleeping in a cold room with the arms exposed. At this time it lasted about two weeks, disappearing gradually. All the rest of the winter and spring, until the return of warm weather, the swelling recurred on any exposure to cold. It rarely lasted more than a few hours or a day or two at a time, however. Thick mittens, worn out of doors and at night, decidedly diminished the frequency and severity of the attacks. There was no return of the swelling during the winter of 1898–99. In October, 1899, however, she came in rather late on a cool afternoon, not having worn mittens as the weather was warm when she went out, with her right hand and arm swollen as before. It went away in a few hours and has not returned since.

Case III. Laura M. was brought to the Medical Out-patient Department of the Infants' Hospital, March 15, 1899. She was then four months old. She was born at full term, head presentation, about three-quarters of an hour before the arrival of the doctor. Any injury to the arms at birth would thus seem improbable. Since birth the right upper extremity has frequently become swollen and purplish. During these attacks the child has seemed unable to use the arm. After from two to six hours the natural appearance and function have returned. The attacks have recurred at any time of day or night and have apparently not been accompanied by pain. The mother was inclined to attribute them to a slight injury to her right arm which she received when she was about three months pregnant! ! !

She was a large, fat baby in very good condition. The right arm was then of normal color but the student who took the history stated that while he was taking it the arm was markedly purple. It was warm and did not pit on pressure. The circumference of the right forearm was one and one-half centimetres and that of the right arm one-half centimetre greater than that of the corresponding part on the left. There were no enlarged glands in the axilla and the pulse at the wrist was normal. The heart was normal. There was no tenderness and the child moved the arm freely.

She was seen again October 4, 1899. Her aunt stated that the attacks had continued, but had been much less marked during the warm weather. She thought that there was some connection between their occurrence and the external temperature. The swelling had been much more pronounced during the last few days of cool weather. She thought that the right arm was now always a little larger than the left.

The color of the arm was then normal but it seemed somewhat larger than the left and the forearm and hand looked edematous. There was no pitting on pressure, however. The circumference of the forearm was one and a half centimetres and that of the arm one centimetre larger than on the other side. The surface temperature was normal, there was no tenderness and the arm was moved freely. There was no enlargement of the axillary glands, the pulse was normal at the wrist and the heart was normal.

Reports of Societies.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

A. K. STONE, M.D., SECRETARY.

Regular meeting, Monday, November 6, 1899, Dr. R. H. Fitz in the chair.

ANATOMICAL SPECIMENS.

Dr. Beach: This photograph is from a child seven years old who was the subject of imperforate anus. The rectum ends within the vulva. The vagina is immediately above it and the meatus of the bladder immediately above that. This photograph has been taken to show the three passages, making a cloacal aperture of the vulva. She was referred to me with the idea that some surgical measure might be advisable, but the control of fecal movements was so good and there being no certainty of a sphincter to guard a new anus, I advised against interference. The child had no inconvenience from the unusual condition, which was discovered by the nurse at birth.

Dr. Beach stated in answer to a question by Dr. Vickery that the conformation of the parts was similar to what exists in the hen.

Dr. Withington: Would Dr. Beach take that position as a rule with regard to all such cases, or was there in this particular case some reason why operative interference was not called for?

Dr. Beach: It was the first time I ever saw this arrangement of the parts. As the child had lived to be seven years old, had not suffered, and there was control of the movements, I felt that in this case we had better make no interference. I have operated a number of times in cases of imperforate anus and once advised a laparotomy soon after birth, where there

was no outlet for the fecal movements and no guide for a dissection.

DR. WITHINGTON: You would not take the general position of refusing an operation in all cases where there was perfect passage for the fecal matter?

DR. BEACH: No; I should be guided by the exigencies of the case.

DR. WITHINGTON: I ask the question because I have now a child, born about six months ago, in whom there is precisely the same deformity, the rectum ending inside the vagina and there being no anus at the proper place. I had assumed that it would be necessary by and by for the child to have something done in an operative way, at any rate before reaching a marriageable age. There is absolutely no obstruction to the passage of fecal matter and the child has no inconvenience in any way. The defect was discovered a day or two after birth, and I said nothing to the mother until she got through the puerperium, and then I told her that when the child got older I presumed surgical interference would be necessary. I am interested to know it is not considered necessarily indicated in case the passage is perfectly patent and well controlled, as it is in Dr. Beach's case and in the case I have in mind. The child certainly has no inconvenience and apparently is going to have perfect sphincteric control of the rectum.

DR. BEACH: If the end of the rectum is guarded by a sphincter at the vulva, and it is dissected away from that sphincter, displacing the rectum to the middle of the ischio-rectal space, where no sphincter is found to guard it, incontinence of feces may be expected, and, it seems to me, in that case it is better to bear the ills we have than to invite others.

DR. B. TENNEY read a paper on

APPENDICITIS IN A HERNIAL SAC.[1]

DR. BEACH: I never have happened to see this complication in any case of hernia or appendix upon which I have operated, though I know it has occurred at the Massachusetts Hospital. The lesson to be drawn from the reader's paper is that all cases of hernia, or where hernia is supposed to exist, with the slightest obstructive symptoms should be very carefully investigated. My rule is contrary to past teaching, which directs, first, taxis, and, if unsuccessful, operation. Personal experiences justify me in urging exploration of the hernial sac whenever obstruction symptoms exist and being guided by the condition found. This course would surely disclose the complication described by Dr. Tenney and prevent the return of a gangrenous appendix or a gangrenous loop of the intestine to the peritoneal cavity. I am sure that this course would have saved cases that I lost in my early operations from not realizing how rapidly gangrene could occur after obstruction, and that intestine irremediably injured by a short period of constriction could easily be returned by taxis.

DR. F. C. COBB read a paper on

EPISTAXIS.[2]

DR. FARLOW: There are many mild cases of nose-bleed, which are usually considered of no consequence by the patient, but which are deserving of careful attention; the slight but recurring hemorrhages caused by blowing or picking the nose. This is usually a sign of an erosion of the septum which may lead to an ulceration or perforation, and may be the starting point for an attack of facial erysipelas. I have in mind several such cases, where the question of cause and effect seemed very clear. It is always well to examine the nasal septum of sufferers from facial erysipelas and also inquire as to the existence of nose-bleed in the past. According to my experience, nose-bleed is less common when there is deformity of the septum than in the catarrhal, especially atrophic, forms of disease of the mucous membrane where the septum is usually but little irregular.

Nose-bleed in elderly people is usually considered to be difficult to check and to be of unfavorable significance. I have a French thesis written by Tautel, who had access to the Saltpêtrière Hospital in Paris and tabulated a great many cases of nose-bleed in elderly people. He came to the conclusion that the gravity of the prognosis was much exaggerated and that the bleeding was nearly as easily stopped as in younger people. This tallies with my own experience.

With regard to how long a posterior plug can remain in place, I recall the case of an elderly lady who had suffered from a number of severe attacks of nose-bleed. One occurred the day before she was to sail for Europe, and her physician put in an anterior and a posterior plug. He went to the steamer with his patient and asked the ship's surgeon to remove the plugs on the following day. But the history of the past hemorrhages apparently made a deep impression on the surgeon's mind, for he decided not to remove the plugs until he got within sight of land, where he could have assistance if needed, and the unfortunate passenger carried her plugs from Boston to Queenstown, no evil consequences resulting, strangely enough.

It is a good plan to put vaseline on the nasal plug, or some oily substance, so that it shall not adhere to the bleeding point. Moist gauze answers the same purpose. I have found peroxide of hydrogen excellent for stopping epistaxis. In looking for the bleeding point, which is almost always on the anterior inferior cartilaginous septum, I have noticed that students are very likely to pass the speculum in such a way as to cover the bleeding point and it is thus easily overlooked. If the end of the nose is tilted up by the finger the front part of the septum can often be well seen without a speculum; and if the speculum is used it should be held in such a way as to point toward the septum, but its end should not touch the mucous membrane, otherwise it may provoke a bleeding.

I have been extremely pleased with the action of the suprarenal extract, and it seems as if I used it more than cocaine in everyday work. It is most excellent for constricting the blood-vessels and opening up the nose. Under its use I have done a great many bloodless operations in the nose, and I have not seen any unpleasant effects from it. Patients are very likely to wonder whether their nose-bleeds may not be due to polypi and mistake the inferior turbinate (which they can see in a mirror or feel with the finger) for a polypus. But hemorrhage from nasal polypi is not at all common.

The "grip" can be the cause of severe nose-bleeds, as in a series of cases reported by Dr. DeRoaldes, of New Orleans.

Nose-bleed in children may be a sign of adenoid disease, and it is always well when no erosion or bleeding point is found on the septum of a child after a

[1] See page 4 of the Journal.
[2] See page 2 of the Journal.

recent nose-bleed to see whether the blood may not have come through the nostrils from the post-nasal space.

DR. DEBLOIS: As to some points in the causation of epistaxis, I would say that whereas Dr. Cobb speaks of the rarity with which the *presence* of foreign bodies in the nose was a cause of epistaxis, it has been my experience to find that almost invariably their *removal* is followed by epistaxis, particularly if the foreign body has remained in the cavities for some time. In almost all these cases the body remains in apposition to the septum and a certain amount of mucous membrane is, to say the least, thinned, perhaps removed. When that body is removed with forceps or hook, this bleeding point remains, or rather bleeding surface, because it is usually more than a point. I had a case at the hospital in which a shell had been retained in the nose fourteen years. The whole shell appeared to be filled with granulations. The hemorrhage was very profuse.

With regard to traumatic epistaxis, the epistaxis of the prize-fighter, it makes a great deal of difference where the nose is struck — a blow from below producing hemorrhage quicker than a straight blow on the bridge of the nose.

With regard to plugging the nose, I was rather nonplussed the other day while endeavoring to demonstrate the use of Bellocq's canula, to find I tried four different noses before I found one it would go through. It appears to be a very large instrument, and of course with a large instrument, if there is a slight deflection of the septum, the introduction of the canula is very difficult. Now of course the ordinary catheter is a pretty good thing, but the Eustachian catheter is better, and in using the Eustachian catheter the twine that is used should always be waxed, because otherwise, as soon as it touches the mucous surface, enough mucus exudes to be quickly taken up with the string and further introduction becomes impossible. Now, if just an ordinary Eustachian catheter is used, the string can be poked through and seized from the other side with a pair of forceps as soon as it appears below the velum. I have once or twice been called to remove a plug from the posterior nares where there appeared to be no way of getting at it; in other words, after tying the sponge cotton on to the cord they cut it off close and had drawn it up behind the velum assisted by the finger. The end of the twine should always be left out, and instead of making a knot around the twine, if you make a loop and draw it tight and push the cotton up in that way and knot the twine in front of the mouth, of course there will be a slight discomfort from having the twine in, but you can always pull it down again by the part which comes through the mouth.

Dr. Cobb spoke of the constriction to be brought on the superior coronary artery. There is a very simple old-fashioned remedy for nose-bleed which is exactly the same thing, and that is to take a piece of cotton or paper and put it under the lip, pushing it up against the nose and then drawing the muscles of the mouth tight, which produces this constriction in the same way.

Bleeding points are concealed in some cases. There are frequently folds, not on the septum, but just below it in the vault, where the mucous membrane and the skin may very frequently form a kind of fourchette which will conceal these bleeding points, and I have frequently had to open them in order to get the cautery down into them.

In speaking of caustics, I never have found any advantage in using chromic acid. I think the galvanocautery heated to red heat is invariably the best. I have seen cases in which it was not necessary at all for the patient to blow his nose in order to cause epistaxis; people with full habit and determination of blood to the head bowing the head down will be sufficient. I remember the case of an engraver in whom as soon as he commenced work and bowed his head down the blood rushed to the head and this epistaxis would commence. It was supposed he was being saved from apoplexy. He was sent to me with supposed bleeding in the back of the nose. I thought it was there myself, but I was so fortunate as to start one of these little scales in the front of the nose, and two cauterizations completely cured the case. Injections of astringents are very valuable. I saw a case at the dispensary in which the bleeding had continued twenty-four hours. The man was struck on the nose with a billet of wood in a fight on a schooner. The nose was plugged. I could not find any bleeding points. A few injections of tannin checked the hemorrhage and he was kept under surveillance twenty-four hours, but it never returned. I think injections of tannin, particularly iced tannin, are invaluable after operation also.

As regards the polypi I can only concur in what Dr. Farlow and Dr. Cobb have said, that except in advanced malignant disease you do not find hemorrhage accompanying polypoid growth.

DR. COOLIDGE: Excepting such cases of epistaxis as are obviously caused by a neoplasm or some evident constitutional disease, the bleeding almost always comes from the cartilaginous septum. If this were universally understood a great many patients would be saved the discomfort of having their posterior nares plugged when it is unnecessary. This bleeding from the septum may be divided into two classes: (1) that which comes from some erosion due generally to picking the nose with the finger or handkerchief, leading to the formation and the tearing off of a crust; (2) perhaps the more important, that due to the breaking of an artery on the surface of the mucous membrane. On account of its anatomical position this artery cannot retract, and is not obliterated after its rupture, but may at any time bleed again, causing periodic epistaxis, which may recur for weeks or months. It seems to me to be of great importance to find the point from which the bleeding comes if possible; therefore, unless the blood is coming too fast, it is better to sponge and look with a good light to see where the blood comes from before packing. When the vessel which is the cause of the epistaxis is found, the proper treatment is to get rid of that vessel entirely, and the way to do it is to make an eschar including the vessel in it. That can be done with chromic acid, provided the nose is not bleeding at the time. A little chromic acid on a dry surface will make an eschar which will probably stop that vessel effectually. The differential diagnosis between this bleeding from one vessel and bleeding from an eroded surface ought very easily to be made simply from the presence of the eroded surface. An eroded surface should not be cauterized but covered with an ointment. If one vessel only is at fault the bleeding always comes from the same side and comes out in front if it can, unless the patient's head is thrown back. Occasionally a septum looks pretty smooth, and yet there is a weak point which is hard to see unless it is actually bleeding. This form of bleeding occurs frequently in children. A boy will often have two or three large vessels on the

septum and perhaps have nose-bleed every little while for years.

I should say, in my experience, that alcohol had a strong predisposing influence in advanced life, that the man who drinks every day is more likely to have bleeding from the septum than one who does not.

DR. CLARK: There are one or two points I want to speak of which I think have not been brought out by the other speakers, although Dr. Coolidge may have had this condition in mind when speaking of large vessels in the septum. I have seen a number of cases where the septum has presented the appearance such as one sees in acne rosacea, a congeries of large vessels on the septum, not necessarily in old people. I have seen several cases in young people. As Dr. Coolidge said, hemorrhage from these can be prevented by destroying the lumen of the vessels by application of the cautery. In regard to treatment, none of the speakers have mentioned nitrate of silver. Given a case of hemorrhage from the cartilaginous septum it is usually my custom to apply cocaine first and then a four-per-cent. solution of antipyrin, which I think is very useful in continuing the contraction caused by the cocaine. Now that we have suprarenal capsule, the value of the antipyrin solution is not so great. Then I apply nitrate of silver to the bleeding point, either fused on the end of a probe or the solid stick. I think the inflammatory reaction is less than from the galvanocautery and that the end result is fully as satisfactory.

I should like to emphasize what Dr. Cobb said about plugging the posterior nares. In my experience it is never necessary. I have never seen a case of hemorrhage from the nose where plugging of the posterior nares by means of the Bellocq sound or some similar instrument was indicated. I can imagine a case of hemorrhage from the nasopharynx where this might become necessary, but I have never seen one. Bleeding from the septum can always be controlled by packing the nose properly through the anterior nares.

DR. BEACH: There is one practical point I would like to speak of relative to the discomforts of packing a nostril, putting in the plug and taking it out afterwards, from which I have had more or less trouble. A number of years ago I looked about for something to take the place of plugging. What suggested ferric alum injections I cannot say, but they proved to be invaluable. We occasionally had cases of severe epistaxis apply for relief to the Massachusetts Hospital before the days of the throat department, and without a very careful diagnosis of the source of the hemorrhage they entered the surgical department and were classified as epistaxis, idiopathic or traumatic. I found that a saturated solution of ferric alum injected into the nostril from which the hemorrhage proceeded invariably stopped it. From that time I never had to plug the nose either in front or by the posterior nares. That was some fifteen or sixteen years ago or longer. I do not recall a case where I had to use it twice.

DR. GOODALE: In regard to the histological condition in many of these cases of nose-bleed, it has been shown that there is often a plexus of veins at the anterior part of the septum. Just why the plexus should occur at that point has not been explained. Its existence is brought into view very plainly, clinically, by the application of suprarenal extract, when with simple cocaine applications it may pass unobserved. The existence of this plexus is also shown in some cases by cauterizing one or two of the bleeding places and then examining the case later, when it will be seen that other veins or vessels of this plexus have undergone enlargement. These later may become very prominent, and if the same injury is offered by the patient of picking with the finger nail, rupture of the vessel walls and epistaxis will result. I think in a good many cases it would be advisable to watch afterwards as to the condition of affairs, and in that way be ready to head off an epistaxis by cauterizing some of the newly enlarged vessels, which can be perfectly well done.

DR. COOLIDGE: It has been suggested that it is veins that bleed, but the common bleeding in these recurrent cases is obviously arterial. It is not uncommon to see a vessel spurting, sometimes a good-sized one. I should like to emphasize what has already been said, that the more skilful the man the less often will he have to plug the posterior nares. If the bleeding comes from the nasal cavity it generally can be reached from the front, and this is much more comfortable for the patient and better in every way.

DR. FARLOW: A number of microscopical examinations have been made with reference to the connection between erosion and hemorrhage of the septum and Jacobson's organ, which, though present in some animals, is entirely rudimentary in man.

With reference to the injection of ferric alum into the nose, if a solution of it on a pledget of cotton is pressed into the nose and held against the anterior part of the septum, which is the seat of hemorrhage in nearly ninety-nine out of one hundred non-traumatic cases, we shall get all the advantage of the astringent action of the alum without its irritating effect in the back of the nose or throat, where it is not needed.

DR. BEACH: I have never observed any disadvantage except a slight irritation at the time. An interesting case of epistaxis entered the hospital to-day from a wound by a pistol ball, 32 calibre, that entered the auricle on the anterior surface, glanced by the mastoid process of the temporal bone, passed directly downward and forward into the pharynx behind the soft palate, so that I could pass a probe directly through the outside wound forward and downward back of the soft palate, where it could be felt. How the jugular vein and carotid artery escaped injury it is difficult to understand.

DR. COBB: I am sorry that in the discussion one thing which I wished to emphasize particularly, the occurrence of nose-bleed as an early symptom of Bright's disease or some form of nephritis or arteriosclerosis, has not been alluded to. I should have been glad to hear whether any of the gentlemen had had any experience of that sort, that is, where epistaxis has been the first symptom and followed by death from nephritis of any sort. I hoped Dr. Vickery might have said something about this part of the subject.

DR. F. L. JACK: I should like to emphasize one point which Dr. Cobb, I think, mentioned in his paper — the danger to the ears from plugging. As we all know, plugs removed from the nose after twenty-four or forty-eight hours are very foul. This condition would be very apt to cause an irritation in the neighborhood of the Eustachian prominence, producing a middle-ear inflammation, with all the chances of serious trouble following. However, it has been my experience that plugging the posterior nares is seldom necessary. The ears are in danger from a similar cause by plugging through the nose, although the chances are very much less.

DR. VICKERY: I have been trying to recall a case in which that led to the diagnosis. I hardly remember such a case. I have seen nose-bleed prominent in connection with somewhat advanced cardiorenal disease. I have seen a case of epistaxis from the excessive use of alcohol. I have seen it in the form of vicarious menstruation; I have seen it with profound anemia, I think pernicious anemia, and I am sure leukemia. I think a case of leukemia in the wards of the Massachusetts General Hospital finally died with nose-bleed, that is, not that any particular nose-bleed could not be stopped, but that it kept recurring and the patient grew weaker all the time. My impression is that nose-bleed also occurs with heart trouble apart from renal disease. I cannot think of a case I have seen. It seems to me a very valuable suggestion that we ought to search farther than this little ulcerated spot on the septum when a case applies to us for nose-bleed.

DR. FITZ: The question Dr. Cobb raised in reference to the relation between nose-bleed and nephritis I think was alluded to by some of the gentlemen taking part in the discussion. It has repeatedly come to my knowledge that persons with a nephritis have suffered from nose-bleed in the earlier days of the disease, and it is my impression that this symptom is generally mentioned in the text-books in connection with the description of forms of nephritis, especially of the chronic interstitial variety.

There is one other point which none of the gentlemen have alluded to, and that is with reference to the etiology of these dilated vessels in the nasal mucous membrane. The thought which has always been in my mind is that they perhaps were more likely to occur in persons who suffered from chronic nasal catarrh. I should like to know whether Dr. Cobb has made any observations with reference to this point.

DR. COBB: I have not found any reference to nasal catarrh in the etiology of such dilated vessels. I suppose irritating mucous discharge passing over the nose might cause hyperemia.

DR. FITZ: There seems to be a very plausible explanation of the occurrence of nose-bleed in cardiac cases as mentioned by Dr. Vickery, namely, passive congestion of the mucous membrane and dilatation of the vessels, associated with increased secretion from the nasal fossæ.

SUFFOLK DISTRICT MEDICAL SOCIETY. SECTION FOR CLINICAL MEDICINE, PATHOLOGY AND HYGIENE.

J. BERGEN OGDEN, M.D., SECRETARY.

REGULAR meeting, Wednesday, October 18, 1899, DR. H. F. VICKERY in the chair.

DR. J. L. MORSE reported

SOME UNUSUAL CASES OF ANGIONEUROTIC EDEMA IN INFANCY.[1]

DR. HEWES: I should like to ask Dr. Morse whether there was any coldness of the part, as you often get in the parts in Raynaud's disease?

DR. MORSE: I should say that in the first case the surface temperature was somewhat increased, and in the other two, if anything, somewhat diminished. The changes were, however, very slight.

DR. VICKERY: I myself have never seen a case of angioneurotic edema in infancy, but several cases in adults. There is now under my care a young unmarried woman who is neurotic. At present she has some febrile disturbance associated with rheumatism in the right hip-joint. Some year or two ago she had a general edema without any renal or cardiac trouble, and she was in a debilitated state. I think that she had amenorrhea at the time and she left the hospital not much relieved. She then came under the care of a doctor who was much interested in her case and, after trying one means and another of improving her condition, he found that decided improvement, with return of the menses, followed the ingestion of ovarian extract. She now has no edema. I remember another woman about thirty, also neurotic, who had edema which might well have been thought to be renal in its origin, but there was nothing wrong with the kidneys so far as we could make out on careful observation of the case, and it seemed impossible to call the edema anything but a neurotic affair. Both these cases were not so localized; they were more general. Of course there are a great many cases of localized edema of this kind. The possibility of myxedma in both of these cases was considered, but it was possible to exclude it.

DR. M. P. SMITHWICK read a paper entitled

NITRATE OF SILVER IN HYPERCHLORHYDRIA.[2]

DR. HEWES: I have had some experience in the treatment of hyperchlorhydria with nitrate of silver and I have convinced myself that it has considerable use in the treatment of that condition. My method of treating the hyperchlorhydria has been a systematic one. I have always endeavored, after determining the existence of hyperchlorhydria by chemical analysis, to treat the case as much as possible by diet, that is, I start them on a proteid diet and try to offset the symptoms purely by the use of the diet. If the patient comes back after a week or ten days with the symptoms unmitigated I use alkalies in addition to the proteid diet. When that fails I use nitrate of silver—reserving it for the severe cases. Out of perhaps 100 cases of hyperchlorhydria that I have seen I should say, without having the figures here, that perhaps 20 have failed to show marked amelioration with the diet, or the diet plus the alkalies. In some of these cases which have failed to improve or to improve markedly under the proteid diet or under the proteid diet plus the alkalies, the nitrate of silver has had marked beneficial effects, in fact, practically curative effects. I can remember four cases in which the nitrate of silver treatment was begun in the third or fourth week and in all four cases the effect of a continuous treatment with nitrate of silver for one or two months has been, as far as I know, curative as regards the symptoms of the patient. Of course, as Dr. Smithwick's paper shows, he did not, and I imagine in my cases I did not, cure the hyperchlorhydria. The last analyses Dr. Smithwick gave were higher as a matter of fact than the first. In reality the hyperchlorhydria is quite as rampant as ever, but the treatment has diminished the patient's sensibility to it, which as a matter of fact, as far as I understand it, is in our clinical terminology all that hyperchlorhydria means. You frequently see patients with free hydrochloric acid of 2.4 grammes per thousand and even more without symptoms, and you frequently see patients with typical symptoms of hyper-

[1] See page 10 of the Journal.

[2] See page 6 of the Journal.

chlorhydria with free hydrochloric acid of .5 of a gramme per thousand.

In regard to what the specific action of nitrate of silver is in these cases I have no very clear idea. Of course it has an astringent action, but it is hard to see how one-fourth grain given every morning can have any permanent action upon the stomach. All we have is our clinical evidence that some cases that have resisted other treatment have improved with nitrate of silver. I have used one-third of a grain once and sometimes twice a day and kept it up a month and if necessary two months. The chief symptoms which the cases have ordinarily suffered from have been pain or distress and frequently a stasis of contents, with vomiting, and the two apparently disappear together. Many cases have no vomiting but heartburn and pyrosis. It is thought by writers on the subject of hyperacidity or hyperchlorhydria that the stasis which occurs is due to spasm of the pylorus induced by the acidity; and in relieving the one you relieve the other. I have had very good evidence in a number of cases that this was so. I remember one case, in which a girl had suffered attacks of pain in the stomach one-half hour after food for two or three months and for the last month vomited large amounts every two or three days. It was quite evident there was an accumulation which relieved itself by vomiting. The attacks of pain would become more frequent up to the third day, when there would be pain almost all the time and finally vomiting. That case was entirely cured by the use of proteid diet, and large amounts of alkalies given whenever she had the pain. I practically kept the acidity neutralized as much as possible and from the time she began to take the alkalies p. r. n. she ceased to have the pain. There, apparently, the careful administration of alkalies controlled the hyperacidity in the sense that it controlled its effects.

DR. COOLIDGE: There are only three cases of hyperchlorhydria I can report, which have been treated by nitrate of silver. Two were not improved, while the third was very much improved. All had resisted other forms of treatment. Nux vomica and also alkalies and bismuth were given but without effect. The one which was benefited the most was the worst of all, the one that had the most pain. When this man came to the hospital he had a box of morphine pills which had been given by a physician, the pain at times being so great. He had been under treatment a long time, and when he came in, said he came in because his stomach was "too acid." There was no examination of his stomach contents made after fasting, but there was an increased amount of hydrochloric acid after the test meal. Within three days of the time he commenced taking one-fourth grain of nitrate of silver, he commenced to improve and the improvement continued. He took nitrate of silver regularly a few weeks and then only once in a while. The two cases that failed both had large amounts of hydrochloric acid in the fasting stomach. This gives rise to the question as to whether nitrate of silver put into a stomach when there is hydrochloric acid present is going to have any local effect or going to do any good. The same thing was quite true in these cases, as Dr. Hewes found, that there was no diminution in the amount of hydrochloric acid, but simply in the sensitiveness, so to speak, of the stomach.

DR. VICKERY: I should like to ask if Dr. Hewes administered the nitrate of silver in the same way Dr. Smithwick did.

DR. HEWES: In some; and in others I let the patient take it in one-half glass of water on getting up in the morning. When I gave it twice a day I gave it early in the morning and then at a period in the afternoon when the patient had fasted at least four hours after a simple meal. The patient took it out of a glass of water in that case.

DR. SMITHWICK: I would like to ask Dr. Hewes if he happens to recall how much acidity was found in the fasting stomach in the cases in which nitrate of silver failed.

DR. HEWES: I can recall one perfectly well. There was none. I remember another, in which the acid was about 1.5 grammes per thousand of free hydrochloric acid. That was a case with hypersecretion. Here I used lavage before administration. Of course, there are cases in which nitrate of silver fails, cases in which everything seems to fail.

DR. SMITHWICK: I should like to ask Dr. Ogden if, where it seems advisable to push nitrate of silver, there is a practical way of estimating whether elimination is sufficiently rapid before you begin to get evidences of argyria. Would the urine be a practical test?

DR. OGDEN: I am not aware that any definite information can be obtained from the urine under such circumstances.

DR. VICKERY: The neurologists have that question to consider and I think in some text-books it is stated how many grains it is safe for an individual to take. Up to a certain limit there is safety from argyria.

DR. HEWES: Einhorn gives this nitrate of silver as a spray with special apparatus and claims he gets better results in that way. He sprays a 1–1,000 solution in the stomach, using a movable end to the tube. In that way the action is more direct than the way we give it.

DR. VICKERY: I should think that some of these cases would react to any rather novel and striking means of treatment, even if it were perhaps not physiologically effective. I should like to ask Dr. Smithwick or Dr. Hewes if they have ever seen relief upon exclusive milk diet.

DR. SMITHWICK: Oh, very much. In the case I reported at greatest length on milk diet, the symptoms practically disappeared.

DR. VICKERY: I had a case that was refractory until that was done.

DR. SMITHWICK: It seems to me peptonized milk has worked better than ordinary milk. Some of these cases claim they cannot take milk; that they vomit it in thick curds.

DR. HEWES: I think as a rule you will not get as good results with a milk diet as with stronger proteids, except in cases where the hyperchlorhydria is due to the irritation of an ulcer. Meat or eggs are preferable from the point of view of utilizing the superfluous acid or even things like somatose and peptones, if the patient can bear them. Milk has a low hydrochloric-acid-combining power, practically speaking, in proportion to its bulk.

DR. VICKERY: I myself would like to speak of a case, if the gentlemen have the patience to hear about it, that has interested me. It is a striking case. It was a man seventy years old who suffered very much from pain in the epigastrium, had lost forty pounds' weight and had a distinct cachectic appearance, not mere pallor, but a yellowish pallor. His tongue, however, did not look as the tongue in a great many cases

of abdominal cancer does. It had the normal amount of epithelium upon it and was not very bright red and I noticed that fact and record was made of it. No lump could be felt by me. This man vomited coffee-ground material. He had a mere trace of hydrochloric acid in his stomach one hour after a test breakfast and a good deal of lactic and butyric and acetic acid. He also had a leucocytosis, and no increase of the white cells after digestion. He suddenly had a very severe pain, his pulse changed from 80 to 150, his abdomen became distended, rigid, and tender, and the diagnosis of a perforation was made; but in consultation Dr. J. C. Warren, Dr. Maurice H. Richardson and myself all agreed that he was not a fit subject for operation; his strength was not sufficient for it. His sufferings were mitigated with morphine and the autopsy showed a perforated ulcer of the duodenum without any sign of cancer whatever. It was on the posterior side, deep in, and could not have been got at by operation, the pathologist, Dr. Wright, thought. If there had been no autopsy I should have felt sure it was a case of carcinoma, and in going over the ground I cannot exactly see why he is excusable for not having a carcinoma instead of an ulcer. Perhaps you gentlemen who devote so much time to digestive disturbances may be able to make some instructive remarks upon my report of this case.

Recent Literature.

The Nervous System and its Diseases. By CHARLES K. MILLS, M.D. Pp. xxx, 1,056, with 459 illustrations. Philadelphia: J. B. Lippincott Co. 1898.

Although not definitely indicated on the title page, this is really the first volume of an exhaustive treatise on the diseases of the nervous system which is destined on its completion to take high rank among the larger works upon the subject. The present volume deals with the anatomy of the nervous system, the general pathology, etiology, methods of investigation and therapeutics, and the diseases of the brain and cranial nerves, with the exception of mental diseases. As all familiar with American neurology for the last twenty years might safely have predicted, the work is exhaustive and the fruit not only of wide study but of prolonged original investigation in clinical neurology. The section on Anatomy is well written and reasonably full, but we believe it would be more helpful to the student if the embryological development were made more prominent and the neurone theory brought more into the foreground, so that he might more readily obtain a few simple, fundamental conceptions upon which to group the mass of facts presented. Curiously enough no mention is made of the internal anatomy of the cell body of the neurone as made evident by Nissl's method. It was to be expected, but none the less to be regretted, that the writer should adopt the cacophonous jargon of Wilder, which is so well calculated to make cerebral anatomy unintelligible except to the adept, but he has furnished the reader with a key to these weird terms, so that the student's task is simply made a trifle more difficult yet not impossible. The chapter on General Therapeutics is full of helpful suggestions for the practitioner, the results of the wide experience of many years. The section on Methods of Examination is unfortunately too condensed. The importance of careful training in clinical examination is so vital that we regret that the author has not given the student fuller details. Above all, the study of the mental symptoms, so often neglected and for which so little help is usually to be obtained from text-books, receives too little consideration, unless the author intends to dwell upon it more elaborately in the second volume — a task which we trust he will undertake.

The remaining chapters, upon the Diseases of the Brain and Cranial Nerves, are elaborate and complete. Upon certain points of controversy we might be disposed to differ with the author, but although his own views are positive he deals fully and fairly with the opposing views and presents the arguments on his own side without exaggeration. In the enormous wealth of material contained in these chapters it sometimes seems as if the fulness of detail almost obscured the broader general outlines, but this is inevitable in a work of such an encyclopedic character. Of especial originality and importance is the chapter on what are called residual encephalic lesions. The study of the later stages of hemiplegia contained in this chapter is admirable and is one of the fullest and most detailed contributions to the subject with which we are familiar. An unavoidable delay in the publication of this review enables us to bring stronger testimony to the value of the book as a work of reference from frequent use during the past year, which has shown its completeness and trustworthiness. It takes high rank among the larger treatises on neurology and adds new lustre to the American contributions to the subject.

A Manual of Diseases of the Nervous System. By SIR W. R. GOWERS, M.D., F.R.C.P., F.R.S. Third edition, revised and enlarged. Edited by SIR W. R. GOWERS and JAMES TAYLOR, M.D., F.R.C.P. Vol. I, Diseases of the Nerves and Spinal Cord. Pp. xvi, 692, with 192 illustrations. Philadelphia: P. Blakiston's Son & Co. 1899.

The merits of Sir William Gowers's great work are so widely recognized and they have been so repeatedly praised in these columns that it seems but a work of supererogation to commend this new edition, which has grown to be one-half as large again as the original volume and considerably larger than that of the second edition. A new chapter has been added on the General Constitution of the Nervous System, setting forth briefly the neurone theory. Chapters have also been added on Crural Neuritis, Neuromyostitis, Acute Polymyositis, Herpetic Neuritis, the Family Form of Spastic Paraplegia, Sclerosis from Toxic Blood States and the Family Form of Spinal Muscular Atrophy in Children, and Dr. F. E. Batten has added an appendix on the Muscle Spindle. These, however, represent only a few of the additions, for the whole work has been thoroughly revised, and additions and changes may be found in every chapter, which bring the work up to date. It can therefore be said of this new edition, still more emphatically than we have said before, that it is the best large treatise on nervous diseases extant.

OFFICERS OF BROOKLYN SOCIETY FOR NEUROLOGY. — At the annual meeting of the Brooklyn Society for Neurology, Dr. Wm. Browning was elected President; Dr. R C. F. Coombes, Vice-President, and Dr. W. H. Haynes, Secretary, for the ensuing year.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, JANUARY 4, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.

OUR ATTITUDE TOWARD INVESTIGATION.

THERE can be little doubt that the new century, and particularly its early years, is likely to witness changes of importance in medical education and matters pertaining thereto. The reforms have, in fact, already begun, and in all progressive institutions we may see, if we look, the introduction of new methods, the extension of the curriculum in various lines, and the gradual complete recognition of the claims of medicine to rank as an integral part of a university education. All these matters we have repeatedly had occasion to allude to in these columns during the past year, but the subject is certainly one which claims our repeated consideration. Evidently many new problems must arise before the new régime may be crystallized into definite and permanent form, if, in fact, that is ever possible, and in the meantime it is desirable to encourage discussion of the situation from all points of view.

We are glad, therefore, to notice that at the recent meeting of the American Society of Naturalists and Affiliated Societies a discussion was held regarding the position universities should take regarding investigation, and that the question of investigation in medicine received its share of attention.

The discussion was opened by Prof. Thomas Dwight, whose remarks we publish in this issue. It will be seen that Dr. Dwight is conservative; that he does not look with undisguised satisfaction on the encroachments of what is ordinarily called original investigation. He feels that the medical student should be a follower rather than an originator during the early years of his education, and that if he is destined later to investigate in new fields, he will surely do so, whatever his early training may have been. There can be no doubt, Dr. Dwight argues, that whatever the future may have in store, the medical school must still make practitioners of medicine, in the practical sense of the term, and that the best schools must not refuse to make the best practitioners. With this we are certainly in complete agreement, only we would not too sharply separate the spirit of learning from the spirit of investigating, as perhaps Dr. Dwight is inclined to do. We feel rather that the two attitudes are usually combined in good students everywhere, and that the great aim of the future, even in undergraduate medical education, must be to associate far more perfectly than we have yet done the claims of the spirit of investigation with those of the spirit of mere receptivity. This should be done in the student days and not after. What we need is a mean between the two extremes of originality and perfectly passive receptivity, and we are confident that a properly arranged course may be devised to bring out both of these attributes to the detriment of neither. To postpone all investigation to an indefinite future is, to our minds, as great an error as to urge its necessity on elementary students to the exclusion of fundamental knowledge at the very outset of their course. A compromise is most certainly both possible and desirable.

We can safely endorse what Dr. Dwight says about prizes and scholarships. As between prizes and scholarships or fellowships, the latter, it seems to us, are likely to be the more useful. There is no way in which a university may more profitably bestow its bounty than by making provision for promising students. A scholarship is a simple means to a perfectly definite end. The indiscriminate bestowal of prizes, on the other hand, establishes an entirely false standard and does little toward stimulating research or cultivating the spirit of true scholarship, an opinion which we have recently expressed.

MEDICAL MEETINGS AND MEDICAL PAPERS.

SOME of us go to medical meetings; some of us write medical papers; a few of us do both, but a large proportion of us do neither. The reasons for these various attitudes of mind are no doubt very complex, and we have no desire to enter upon the task of analysis at this time. We should, however, like to call attention to a few palpable facts, which are constantly in danger of being ignored or forgotten. In the first place, papers which are admirable for publication are oftentimes most unsuitable to read at medical meetings. Medical meetings come usually in the evening; the audience is made up of men who have no doubt been busy during the day, and are hoping against hope that some slight recreation may attend their effort to be present at the meeting in question. They come possibly to learn something new, or to say something in discussion, but they do not come to be bored by detail or kept waiting for conclusions which might as easily be given at the end of fifteen minutes as at the end of an hour. Primarily, therefore, papers should be concise. If the attention of any considerable body of men is to be maintained, it is desirable that it be not taxed beyond half an hour. In this regard we have observed an improvement within the past few years; the tendency has grown at most of our societies to reduce the length of papers by special request to the writers, with a consequent gain in attendance.

Infinitely worse than mere length, however, is redundancy of detail. In certain frames of mind in which, unfortunately, a doctor is very apt to be at the end of a day, details are almost unbearable. They rouse an inward revolt, which bids fair to put the sufferer into the category of the habitual non-attendants. This is due to the fact that minute details are almost never in place at medical meetings, and yet how often we hear them to the absolute confusion of our mental faculties. What idea can it convey to be told the minutiæ of the daily treatment of a patient, temperature in fractions of degrees, pulse, respiration, urine, with its albumin and sugar and urea, and all the shades of change which mark the progress of disease? This is all extremely important as a matter of record, and as the basis of future publication, but as a means of profitable entertainment at a medical meeting it fails most lamentably. To begin with, no one can follow such details; they make no mental impression on the auditors, and even if they did the results are all the audience wants to know. Let the reader state, if he wishes, how assiduously he has studied his case, but let him also prove the effects of his study by giving his matured conclusions on the occasion of his public appearance at the meeting. Such a habit should not be difficult of cultivation, and if universally practised, we have no question the medical meeting would quickly acquire an interest and influence which are now often conspicuously lacking. One other suggestion is the discussion. Why so many words? we frequently wonder. Why weary an already tired audience by an often irrelevant and frequently very long narration of personal experience, which might quite as easily be condensed into a few well-chosen sentences? From many sources a protest has gone up against this bane of the medical meetings. It is becoming more and more the custom to limit the discussion by each speaker to five minutes, with no detriment, we venture to think, to its effectiveness. We need good discussion, but let it be short and to the point. If we could shorten our papers, cut out extraneous detail, and insist on concise discussion, we should no longer be called upon to bewail the proverbially poor attendance at the social and professional gathering which we call a medical meeting.

MEDICAL NOTES.

THREE CENTENARIANS. — Mrs. Mary A. Harrington, of Newport, R. I., died recently at the reputed age of one hundred and three years. On New Year's Day George Washington Greene, a negro, celebrated his one hundred and fourteenth birthday at the almshouse, Hempstead, Long Island, New York, where he has been an inmate for the last forty years. He was born a slave in New Jersey, and the record of his age is said to be authentic. He boasts of having been married seven times and of having been the father of twenty-one children. George Blakeman, the oldest man in Connecticut, died at his home in Derby, December 29th. He was one hundred years and two months of age. He ascribed his longevity to frugal living, and especially to abstinence from all medicine. At the age of twenty-one years he was sickly and completely disheartened after years of medical treatment. It was then that he resolved to eschew all medicine from that time forth. He did so, and his health became robust. He was married for the second time in his eighty-first year.

GOOD HOSPITAL SERVICE.—Sir William MacCormac, who was with the British troops at the recent engagement of the Tugela River, reports that excellent hospital work was done. Trains full of wounded men began leaving the field for Estcourt at two o'clock in the afternoon. Others quickly followed and the field was cleared of the wounded at five o'clock, the volunteer ambulances working splendidly. Eight hundred wounded passed through the Chieveley hospitals, from which all the patients were transferred to the base hospitals by the morning of December 17th, the battle being on the 15th.

SURGEONS FOR THE BOERS.—A report which appears to lack confirmation is to the effect that a hospital ship for the use of the Boers is to be fitted out in America. The plan has originated in Philadelphia, through the agency of the Ancient Order of Hibernians. It has been pertinently asked: What do the Boers want of a hospital ship, since they have no seaboard?

PLAGUE IN HAWAII.—Two cases of supposed plague have been reported from Honolulu. Surgeon-General Wyman, of the Marine-Hospital Service, has notified the authorities at the several Pacific ports, but said that beyond the exercise of extra vigilance no measures would be taken at present regarding the plague, as the situation is not considered critical.

FAMINE IN INDIA.—It is predicted on good authority that the present famine in Western India bids fair to be much more distressing than the famine two years ago. Severe drought has already begun in the Ahmednagar district. In many places it is hard to get sufficient water to drink and no rain may be expected until the middle of June.

ANOTHER CONSULTING SURGEON.—The British War Office has nominated Sir William Stokes as consulting surgeon to the South African forces. He will join the army in South Africa as soon as possible.

DR. THOMAS LAUDER BRUNTON KNIGHTED. — Dr. Thomas Lauder Brunton, physician to St. Bartholomew's Hospital, London, has been knighted.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, January 3, 1900, there were reported to the Board of Health of Boston the following numbers of cases of acute infectious diseases: diphtheria 83, scarlatina 64, measles 57, typhoid fever 6, small-pox 2.

DANGERS OF OVERTRAINING. — This topic has recently been discussed at a meeting, held in New Haven, of the Society of College Gymnasium Directors. Dr. D. A. Sargent, of Harvard, Dr. Edward Hitchcock, of Amherst, Dr. W. G. Anderson, of Yale, and many others spoke. Dr. Anderson, in answer to the query as to the best means of preventing students entering athletic contests when in a crippled condition, strongly favored a scheme such as will probably soon be put into effect at Yale, in appointing a man of wide athletic experience, a college graduate and one in touch with the students, to supervise athletics and to deal with all its questions. There are only two solutions for the question. One is to demand a careful medical examination of the athletes while in training and just before the contest is about to begin. Next there must be hearty co-operation between the medical experts at the gymnasium and the trainer himself. Both must exercise tolerance. This is the solution of the problem under present conditions, which are not ideal.

CONDITIONS IN BROOKLINE, MASS. — The Board of Health of Brookline reports no change in the diphtheria situation. There are still cases at the hospitals, but the outlook for a complete disappearance of the disease is encouraging. Another case of scarlet fever has been reported to the Board. There were three deaths during the month of December.

FREE VACCINATION CEASES IN EAST BOSTON. — Free vaccination in East Boston was discontinued last week, after one week's trial. The number vaccinated was about 500, considerably fewer than had been hoped would accept the opportunity. Two new cases of small-pox have appeared in the district.

ACQUITTAL OF PROFESSOR O. T. OSBORNE. — We are glad to record the acquittal of Dr. O. T. Osborne, of the Yale Medical Faculty, on a charge of performing an autopsy illegally. Charges made by the family of the patient were not sustained by the evidence adduced.

DEATHS FROM WOOD ALCOHOL. — Several deaths have recently occurred at Melrose from drinking wood alcohol; other patients are slowly recovering from its effect.

NEW YORK.

VITAL STATISTICS FOR 1899. — During the year 1899 there were reported in the city 65,218 deaths, 77,648 births, and 30,470 marriages. In 1898 there were 65,864 deaths, 78,696 births, and 28,800 marriages reported. There has been a decrease in the annual death-rate, which was 18.55 in 1898, and 18.37 in 1899; and the percentage of deaths under five years on the total mortality decreased from 38.4 to 36.4. In the Borough of Manhattan the annual death-rate in 1899 was 18.49, against 19.11 in 1898; in the Borough of the Bronx, 22.61, against 27.10; in the Borough of Brooklyn, 17.50, against 18.19; in the Borough of Queens, 18.67, against 19.92; and in the Borough of Richmond, 18.79, against 19.94. It will thus be seen that while the mortality has been lower in Brooklyn than in any other of the boroughs, the greatest decrease in the death-rate has been in the Borough of the Bronx, where the number of large institutions always makes the number of deaths relatively greater than in the other boroughs. The following table, prepared by the Health Department, shows the number of deaths reported in the two years from some of the prominent causes:

Cause of Death.	1898	1899
Influenza	356	481
Measles	648	583
Scarlet fever	703	530
Diphtheria	1,461	1,600
Typhoid fever	670	547
Yellow fever	1	—
Malarial fever	251	161
Cerebrospinal meningitis	355	303
Diarrheal diseases	4,844	3,443
Heart disease	4,075	3,941
Bronchitis	1,896	1,994
Pneumonia	7,485	8,529
Phthisis	7,502	7,991
Bright's disease and nephritis	4,669	5,097
Sunstroke	548	141
Accidents	2,311	2,472
Suicides	693	629
Homicides	115	131
All other causes	26,162	25,826

BILL FOR UNIFICATION OF EDUCATIONAL SYSTEMS. — A bill for presentation to the Legislature has been framed by a special commission appointed by the Governor, which provides for the unification of the educational system of the State and the State Board of Regents. The membership of that body is reduced to fifteen, and the administration of the educational system is placed in the hands of a chancellor, who is to serve for eight years and receive an annual salary of $10,000. At the last meeting of the Board of Regents, Dr. W. H. Watson, of Utica, one of its members, made an argument against the appointment of the chancellor by the Governor, stating that the medical, as well as the legal, profession would be greatly injured by an unworthy choice of the executive head of the proposed Department of Instruction. "The State of New York to-day," he said, "stands in the very vanguard of medical education, and I voice the opinion of all educated men in the medical profession when I state that it considers itself particularly fortunate in having a central educational and administrative body which is at the same time an impartial court (the exact analogue of which exists in no other State) to pass upon the preliminary requirements for medical education and to supervise and conduct the examinations for medical licenses to practise."

DEATH OF FATHER SYLVESTER MALONE. — Brooklyn has lost one of its most picturesque characters and public-spirited citizens in the death of the venerable parish priest, Father Sylvester Malone. His good deeds were not confined to those of his own communion, and when, in 1894, he celebrated his golden jubilee, the fiftieth anniversary of his connection with the Church of St. Peter and St. Paul, a feature of it was a notable reception given him at the Brooklyn Academy of Music, at which the mayor of the city presided and addresses were made by many prominent men,

among them being Rabbi Gottheil, Archbishop Ireland and Dr. Lyman Abbott, the former pastor of Plymouth Church. It is related of Father Malone that he successively contracted small-pox, cholera and ship fever in the performance of his sacred duties among the sick poor and among immigrants, and by his will the bulk of his little fortune of six or seven thousand dollars is left to two charitable institutions in which he was deeply interested.

Tuberculosis in New York State. — A special committee of the State Board of Charities has recently been considering the question of establishing State hospitals for the treatment of tuberculosis. The committee will recommend that every locality able to have a hospital for consumptives should have one, and that the State should erect and maintain one or more hospitals where localities unable to maintain local hospitals might send their patients and pay for their care and maintenance. It will also recommend that local boards of health should have more power in dealing with consumption; that it should be declared to be a contagious disease and that the boards of health should have power to establish rules and regulations to protect from contagion the public and members of families in which the disease exists.

A Public Garbage Crematory. — On December 20th Health Officer Doty had a conference with Governor Roosevelt with reference to the establishment of a public crematory for the disposal of the garbage of the city of New York, which is now managed under private contracts, and it is believed that at the coming session of the Legislature a measure providing for this will be passed. During his recent trip abroad Dr. Doty, acting under instructions from the Governor, inspected the crematories in use for this purpose in a number of the principal European cities, and he arrived at the conclusion that the system employed in Hamburg was the most effective and the best adapted to the needs of New York.

Miscellany.

SPECIAL MEDICINE CHEST FOR THE HOSPITAL SHIP "MAINE."

The following description of a special medicine chest fitted with tabloid and soloid products, for the American Ladies' Hospital Ship *Maine*, deserves such appreciative consideration by our readers as its merits require. This specially designed chest is equipped with medicines in accordance with the latest and most scientific methods.

The chest bears the following designs: On the top panel appear the Union Jack and Stars and Stripes entwined; portraits of George Washington, Queen Victoria and President McKinley; and representations of the American eagle and British lion. The front panel bears portraits of Lady Randolph Churchill (President), Mrs. Ronalds (Hon. Treasurer), and Mrs. Blow (Hon. Secretary of the American Ladies' Hospital Ship Committee); a picture of the hospital ship *Maine;* a scene representing the British lion wounded by an arrow (which lies broken at his side), being administered to by Britannia and Columbia — Columbia pouring a healing balm upon the wound, whilst Britannia bandages the paw. A frieze is formed by a representation of American Indian wampum upon which are depicted Brother Jonathan and John Bull grasping hands. The panel at each end of the chest represents Britannia and Columbia supporting a banner bearing the Red Cross. These panels also contain representations of the national emblems — the English oak and American corn. The panel at the back of the chest depicts a charge of the British Regular and Colonial Lancers and a Highland Brigade. The Boers hold their ground, sheltered behind rocks and boulders. The young bugler boy who felled three Boers is noticeable in the scene. Prominently inscribed on the chest are Keble's line, "No distance breaks the tie of blood," and Ambassador Bayard's notable phrase, "Our kin across the sea." The chest is made of oak and covered with Carthaginian cowhide, upon which the designs are tooled by hand.

AMERICAN SOCIETY OF PHYSIOLOGISTS.

The following scientific papers and demonstrations were presented at the recent meeting of the American Physiological Society at New Haven: T. E. Hough, "Certain Improvements in the Technique of Ergograph Work"; G. P. Clark, "A Model to Represent the Principal Railways of the Nervous System;" S. J. Meltzer, "The Intercerebral Injection of Potassium Chlorate"; C. C. Stewart, "Demonstration of a Method for Mammalian Smooth Muscle"; W. T. Porter, "Apparatus for Laboratory Work for Large Classes"; E. T. Reichert, "Some Forms of Apparatus Used in the Course of Practical Instruction of Physiology in the University of Pennsylvania," and "A Universal Artificial Respiration Device"; L. B. Mendel and H. C. Jackson, "Some Features of Nitrogenous Metabolism after Splenectomy"; P. A. Levene, "Some Basic Decomposition Products of Edestin"; W. J. Giles, "A Preliminary Study of the Coagulable Proteids of Connective Tissues"; L. B. Mendel, "The Excretion of Allantoin and Uric Acid in the Cat."

In the course of the meeting Prof. W. O. Atwater was roused to a defence of his position regarding alcohol, which has of late been the subject of so much superficial criticism. Among other things he said what should long since have been accepted as his view of the matter: "Because these experiments show that alcohol, taken at the rate of two and one-half ounces every twenty-four hours, may serve one of the purposes of food, it has been inferred that people in general may take that amount to advantage. This inference is entirely unwarranted, and the error in it is as great as the opposite one, which assumed that alcohol is in no sense a food, but always a poison. So far from regarding the results of these experiments as showing that the moderate use of alcoholic liquors is generally desirable, I would indorse the saying 'alcohol is an excellent thing for people in good health, and especially for young people, to let alone.'"

The following officers were elected: President, R. H. Chittenden, Yale; Secretary, F. S. Lee, Columbia; Council, R. H. Chittenden, F. S. Lee, H. P. Bowditch, of Harvard, W. H. Howell, of Johns Hopkins, W. P. Porter, of Harvard, W. P. Lombard, of Michigan.

DEATH OF SIR JAMES PAGET.

THE death is reported of Sir James Paget, F.R.C., LL.D., D C.L., former President of the Royal College of Surgeons, England, in his eighty-sixth year. He was born in Yarmouth, Eng., January 11, 1814. He studied at St. Bartholomew's Hospital in London, and in 1836 became a member, and in 1843 a fellow, of the Royal College of Surgeons. He was then made successively assistant surgeon, surgeon and consulting surgeon at St. Bartholomew's, sergeant-surgeon to the Queen, surgeon to the Prince of Wales, vice-chancellor to the University of London, and president of the Royal College of Surgeons. He was made a baronet in 1871. In his earliest surgical studies he paid special attention to pathology, and for years his "Lectures on Surgical Pathology" was a text-book of importance.

Correspondence.

HOMEOPATHY AND THE PUBLIC.

CONCORD, N.H., December 29, 1899.

MR. EDITOR:—That the medical practice of to-day presents features greatly modified from those which characterized it in the recent past is frequently a subject of remark and a source of congratulation as well. These changes are manifest upon every side where one comes in contact with the healing art. One need not recall many years of the past to find medicine the victim of mischievous theories, burdened by gross materialism and barbarous in its methods of application. The consequences were a system of heroic treatment and a long-suffering public. Those fittest to survive were truly heroes—men with limb of iron and heart of oak. One of these modifications may be seen in the intellectual quality of those that now represent the medical profession. In medieval times the physician was generally a slave, whose only medical knowledge consisted in a belief in the supernatural influence of charms and amulets. In more recent times the student with meagre education was prepared for professional life by pursuing a course of instruction under the guidance of an older practitioner, which was supplemented by a few weeks' course at a medical college. The traditions of practice were passed along from preceptor to student, the orthodox spirit of the times forbidding any departure from established custom. To-day a satisfactory preliminary education of a scientific nature is required of the student for entrance to medical schools, which are being graded to the four years' course throughout the country. The present intellectual freedom of the members of the profession is leading to discoveries which are placing medicine upon a scientific foundation.

There are also apparent agreeable changes in the armamentarium of the art and methods of treating the sick. Enormous doses and complexity of mixtures have largely disappeared relieving humanity of much distress on their account. Saddle bags and medicine trunks have given way to the pocket medicine case containing vials of simple medicines.

The apothecary store has undergone a change, and is but the dispensary of what the pharmaceutical house prepares with skill and accuracy. At the present time the preparation of drugs in elegant and agreeable forms for administration has reached an art in itself.

Various influences have been active in the transformation of the external features of medicine and are found to have been operative both from without and from within. Medicine has been profoundly influenced by its environment. It has gradually felt the resistless force of the scientific spirit prevailing in other fields of research with which it is intimately associated. This has led to closer observation and clearer comprehension of natural phenomena, with a more rational interpretation of pathological phenomena and treatment. Putting it another way, it may be said that the critical acumen that pervades all departments of thought has found much in medicine to relegate to effete and outgrown custom, regardless of ancient authority, thus clearing the path for progress towards a rational standard in therapeutics. The external form of past methods of alleviating the afflicted are open to criticism, but the object of the conscientious physician has ever been the serving of his patrons to the best of his knowledge. Medicine is to-day altruistic in principle, and as a result of increased knowledge and a keener sense of obligation to a higher standard its theories are more rational and its methods of treatment more humane.

This is now the place to mention another influence which at the beginning was as insignificant as a grain of mustard seed, but which has since produced a distinct modification in general medicine along a certain line. At the beginning of the present century there appeared within the field of medicine, but not accepted as a part of it by the members of the profession, the system of treatment known as homeopathy. The contrast between the new system and the established régime was the widest possible, not so much in its claim of having discovered the only law of cure of nature, for other systems of the times had such dominant theories, as in its methods of applying its theories in practice. Its administration of medicine involved so little material and was withal such a simple method that the apothecaries and physicians, fearing for their livelihood, combined in vigorous opposition against the innovation that lessened the large consumption of drugs and correspondingly endangered their income.

Conservatism has always been the spirit of so-called traditional medicine. It has not mattered whether an innovation contained the truth or was mistaken in its claims, the attitude of the profession at first has been sure to be antagonistic. Those great discoveries of the past which illumine medicine to-day ran the gauntlet of prejudice and ignorance on the part of the profession and found their champions in the common people. The profession as a whole has been the last to esteem the value of its own findings. At least, this is what happened to homeopathy, for the new system won the public readily. There was something in this new method that the public wanted, and so persistently has the public clung to it that it has actually forced the old systems to change, so that to-day there is so little difference in the external appearances of things that one can scarcely distinguish between the different systems of treatment. This leavening of the whole mass has been due to something contained in the new system. We will endeavor to find the ferment that has been so potent.

From a philosophical standpoint the distinguishing characteristics of a system lie in its dogmas. The pivotal theory of homeopathy is its claim of having nature's law of cure as expressed in the symbol, *similia similibus curantur*, or, like cures like. This simply means that there exists naturally a therapeutic relation between the abnormal condition resulting from a morbific cause and the most similar abnormal condition that a drug is capable of producing, which is its characteristic physiological action. The drug disease takes the place of the natural disease, and in turn is easily overcome by the vital powers of the body. It is further claimed that this can best be accomplished by a very small dose. The question now arises as to whether it has been the force following a clear conception of this central dogma by the public that accounts for the establishment and influence of homeopathy.

The principle of homeopathy has failed of a general acceptance, as such, among scientific men. They have been unable to associate its claims of a natural law with other laws of nature. Two of the characteristics of a natural law are its infallibility and its universality. These were the claims of the early homeopaths, whose zeal led them into extravagance of belief. The present conception of the principle of "similia" as being of therapeutic value

in a certain proportion of cases may be the truth of the whole matter, but this allows the claim of "a law of nature" to pass into "innocuous desuetude," where it will forever remain.

From the so-called regular profession homeopathy has met the fiercest opposition. Raising the cry of "no sects, no dogma in medicine," the opposition has spitefully arrayed its ranks against the new system in all it contained. At no time in the past — the same is less true of the present — have those most vigorous in denunciation of the new system been those really able to define its law correctly and caring to investigate its claims impartially. It has not been its central theory that has made its enemies. As compared with the standard set by the fathers of homeopathy the present practitioners of this system are a "mongrel lot," inasmuch as they make use of the name homeopathy and all it implies, publicly, and privately confess that they find the claim of universality a fallacious doctrine. After a recent investigation by correspondence with a large number of homeopathic physicians, graduated within the past ten years, I find that the large majority consider homeopathy as one of many methods of cure, the idea of its being a "law of nature" not being taken seriously.

Homeopathy has found its moral and financial support in public sanction. The writer, having been a practitioner of this system for the first five years of his professional life, has given the subject in hand a large amount of thought and investigation, and has definitely come to the conclusion that the public possess no clear, if any, conception of the philosophy of the system they have patronized so generously. Confidence and faith are naturally the qualities displayed in such matters rather than an intelligent appreciation of a mystic dogma. It has not been its central theory that has made its friends. We must look to some other element in the system in order to account for its public reception and support.

The objective and most tangible feature of homeopathy is its dose. This is its outward expression. If the public failed to comprehend the theory, it found in the small and simple dose a more humane and agreeable method of treatment than that which employed enormous doses of complex mixtures. Wherever homeopathy is referred to, in journalism, pulpit or lecture, it is its infinitesimal dose that is mentioned. The definition of the public is that homeopathy is "a little medicine given often," and this is what they like about it. The small dose in years past has been the point ridiculed by the ignorant of the regular profession, but it is now being considered as rational and scientific to employ the small and simple dose. Thus with popular approval and with a scientific foundation the small dose of homeopathy has been an active agent in the field of therapeutics. This is but another example of the kernel of truth being hidden in the husk of error.

Homeopathy was the product of the eighteenth century. This was an age when men were striving after complete theoretical systems in medicine. Among the celebrities of this time may be mentioned Hoffman, Stahl, Cullen and Brown, each with a theoretical system. At the close of the century appeared Hahnemann with the system of homeopathy. His was to him the true system of all systems because of its universal law of cure, *similia similibus curantur*. But the true superiority was the employment of his idea of the small dose, which has been a positive contribution to therapeutics.

In conclusion, it is the contention of the writer that it has been the small dose rather than, and apart from, the homeopathic law that has appealed to the public; that the public has demanded of other methods the small dose which lies upon a rational foundation. It is further contended that the medicine of the future will rest upon scientific rather than upon theoretical grounds, as is the case with the homeopathic system. The public has chosen between the old and the new because of the agreeable dose apparent in the latter. When all schools of medicine shall have reached the point where the manner of administering medicine is the same, as far as the public can judge, there will be nothing to choose. All doctors will be known as physicians; useless controversy about schools in the profession will cease, and homeopathy will, "like a dew drop glide into the shining sea." The dose will have leavened the lump.

Very truly yours,
ARTHUR F. SUMNER, M.D.

X-RAY EXAMINATIONS OF THE ABDOMEN.

BOSTON, December 30, 1899.

MR. EDITOR: In previous articles I have indicated the diseases of the chest in which x-ray examinations may assist physicians, in addition to the usual methods. The older ways of examining the abdomen may also be supplemented by x-ray examinations, as I have already shown, but I think it would be helpful to again remind practitioners of some of the principles involved in making examinations of this part of the body, which are as follows:

We may put something opaque to the rays into the hollow organs, such as the stomach and intestines, thus making dark areas on the fluorescent screen, or we may put into them something which offers practically no obstacle to the rays, namely, air or some other gas, thus making their position apparent; the parts so distended appear as light areas on the fluorescent screen. Or, further, we may use air or gas to displace the parts near some special organ which we wish to examine. Thus, if we desire to follow the outline of the spleen more fully, we can, by filling the stomach and large intestine with air, contrast the dark area of the spleen with the light area occupied by the gas, through which the rays readily pass.

When it is desired to examine the large intestine, air may be pumped into it, and its outline, such as the sigmoid flexure, and the descending colon, be easily followed. Not only does this enable us to follow the position occupied by the large intestine, but we may more readily detect abnormal conditions in neighboring parts of the abdominal cavity, as I have elsewhere suggested. For example, by distending the stomach, and in some cases the large intestine, we can more easily detect some pathological conditions in or about the pancreas.

Examinations of the abdomen should be made with the rays passing through the body from back to front and from side to side; and when fluid is present the examination should be made with the patient lying on his back and the tube on a level with the fluid, the rays from it passing through the abdomen horizontally. The dark line indicating the level of the fluid may be seen, and its change in position noted when the patient turns. Patients with so-called "phantom tumor" should of course always be examined by the x-rays.

It will thus be seen that the same conditions which obtain in the thorax, and which enable us to contrast the air in the lungs with the denser organs, may to some extent be produced artificially in the abdominal cavity.

In this connection it will be of interest to note the following observation, which suggests that food may be passed nearly the whole length of the intestines within a few hours. I gave six drachms of subnitrate of bismuth, mixed in bread and milk, and drew the outlines of the stomach as seen on the fluorescent screen at intervals during the process of digestion. X-ray photographs were also taken. Five and one-half hours after the bismuth had been given (on an empty stomach), it had collected on what I considered to be the position of the sigmoid flexure, as shown by a dark mass there which had not been present in the beginning; thus the bismuth had gone nearly the full length of the intestines in less than five and one-half hours.

Of course, it facilitates examinations of the abdomen if the bowels are moved well before the examination is made; and bismuth should be taken on an empty stomach and uniformly mixed with the food.

Very truly yours,
FRANCIS H. WILLIAMS, M.D.

METEOROLOGICAL RECORD

For the week ending December 23d, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		We'th'r. *		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S...17	30.66	38	38	26	76	72	74	N.	S.E.	5	11	O.	O.	
M..18	30.49	41	44	38	96	83	90	S.W.	S.W.	6	9	G.	O.	
T...19	30.14	51	64	38	82	77	80	S.W.	W.	14	17	C.	R.	.27
W..20	30.25	38	44	32	78	54	66	S.W.	S.W.	12	6	F.	C.	
T...21	30.36	42	50	34	62	76	72	W.	S.	7	6	C.	C.	
F...22	30.38	44	49	40	84	81	82	S.W.	S.E.	7	6	O.	O.	
S...23	30.21	35	42	38	81	71	61	E.	S.E.	9	10	F.	C.	
☞														

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☞ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DECEMBER 23, 1899.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup.
New York	3,550,053	1256	421	9.92	20.32	.72	1.12	4.32
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	419	129	10.32	18.00	.72	.48	7.20
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	204	55	7.84	24 01	.49	.49	3.43
Baltimore	506,389	168	50	11 80	15.34	1.77	1.77	8.36
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	103	32	18.62	20.58	2.94	9.80	1.96
Washington	277,000	104	23	5.22	19.40	.97	—	3.88
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	60	16	18.33	11.32	1.66	3.33	5.00
Nashville	87,754	22	7	16.60	12.45	4.15	—	12.45
Charleston	65,165	37	7	—	5.40	—	—	—
Worcester	111,732	39	14	2.56	—	—	—	—
Fall River	103,142	26	7	19.25	26 95	11.55	—	—
Cambridge	92,529	31	4	6.46	19.38	—	—	6.46
Lowell	90,114	30	11	—	36.66	—	—	—
New Bedford	70,511	17	—	5.88	11.76	—	5.88	—
Lynn	68 218	28	8	7.14	32.13	—	—	—
Somerville	64,394	18	6	22.22	22.22	—	5.55	5.55
Lawrence	59,672	20	9	15 00	10.00	5.00	—	5.00
Springfield	56,268	14	3	14.28	7.14	—	—	14.28
Holyoke	44,510	14	5	14.28	7.14	—	7.14	—
Brockton	38,750	7	1	—	—	—	—	—
Salem	37,723	7	—	14.28	—	14.28	—	—
Malden	36,421	10	4	10.00	10.00	—	—	10.00
Chelsea	34,235	12	2	8.33	—	—	—	—
Haverhill	32,851	3	1	66.66	66.66	—	—	33.33
Gloucester	31,426	9	2	—	—	—	—	—
Fitchburg	30,523	3	1	—	33.33	—	—	—
Newton	30,461	13	2	—	—	—	—	—
Taunton	28,527	15	2	—	6.66	—	—	—
Everett	28,102	9	4	—	22.22	—	—	—
Quincy	24,578	12	3	8.33	—	8.33	—	—
Pittsfield	23,441	—	—	—	—	—	—	—
Waltham	22,791	10	3	10.00	50.00	—	—	10.00
North Adams	21,583	10	3	—	20.00	—	—	—
Chicopee	18,316	3	1	—	—	—	—	—
Medford	17,190	5	1	60.00	—	—	40.00	20.00
Newburyport	15,636	7	1	—	—	—	—	—
Melrose	14,721	3	—	—	—	—	—	—

Deaths reported 2,762; under five years of age 842; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas and fevers) 277, acute lung diseases 516, consumption 314, diphtheria and croup 130, typhoid fever 37, diarrheal diseases 29, scarlet fever 25, measles 22, whooping-cough 12, erysipelas 11, cerebrospinal meningitis 11.

From scarlet fever New York 10, Boston 6, Philadelphia 5, Pittsburg, Providence, Fall River and Haverhill 1 each. From measles New York 15, Providence 3, Pittsburg 2, Philadelphia and Fall River 1 each. From whooping-cough New York 8, Washington, Providences, Lynn and Chelsea 1 each. From erysipelas New York 8, Boston, Pittsburg and Holyoke 1 each. From cerebrospinal meningitis New York 6, Philadelphia 2, Worcester, Lynn and Lawrence 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,404,408, for the week ending December 9th, the death-rate was 20.8. Deaths reported 4,551: acute diseases of the respiratory organs (London) 548, measles 135, diphtheria 113, fever 75, whooping-cough 70, scarlet fever 38, diarrhea 38, small-pox (Hull) 11.

The death-rates ranged from 13.1 in Croydon to 26.4 in Plymouth: Birmingham 16 9, Bradford 19.9, Cardiff 14.3, Gateshead 21.5, Hull 23.4, Leeds 18.2, Leicester 21.0, Liverpool 25.9, London 22.4, Manchester 20.8, Newcastle-on-Tyne 11.0, Nottingham 14.4, Salford 21.7, Swansea 20.1, West Ham 16.5.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,404,408, for the week ending December 16th, the death-rate was 22 0. Deaths reported 4,820; acute diseases of the respiratory organs (London) 646, measles 143, diphtheria 124, whooping-cough 86, fever 49, diarrhea 48, scarlet fever 38, small-pox (Hull 12, London 1) 14.

The death-rates ranged from 9.6 in Huddersfield to 30.3 in Portsmouth; Birmingham 22.6, Bradford 20.5, Cardiff 19.9, Gateshead 16.1, Hull 22.3, Leeds 20.4, Leicester 22.7, Liverpool 26 5, London 23 8, Manchester 18.8, Newcastle-on-Tyne 19.4, Nottingham 19.4, Salford 23.4, Sheffield 21.4, Swansea 24.6.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING DECEMBER 30, 1899.

H. E. AMES, surgeon, order of December 20th modified; ordered to duty in connection with fitting out the "Kearsarge," Newport News, Va.

E. J. GROW, assistant surgeon, detached from the "Massachusetts" and ordered to the "Dixie."

M. H. SIMONS, medical inspector, ordered to Cleveland, O., for recruiting duty.

SOCIETY NOTICE.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.— The annual meeting of the Society will be held at the Medical Library, 19 Boylston Place, on Monday evening, January 8th, at 8 o'clock.

Subject: "Treatment of Perforation of the Intestines in Typhoid Fever." The discussion will be opened by Dr. Geo. B. Shattuck, to be followed by reports of cases.

Election of officers.

ARTHUR K. STONE, M.D., *Secretary*, 657 Boylston Street.

RECENT DEATHS.

SIR JAMES PAGET, M.M.S.S., Hon., died in London, Eng., December 30, 1899, aged eighty-five years.

GUSTAVUS STORRS WINSTON, M.D., of New York, died on December 29th, of apoplexy. He was born in New York City, November 15, 1833, and was graduated from the College of Physicians and Surgeons, Medical Department of Columbia University, in 1863. He was a surgeon in the army during the Civil War and, being captured, was confined for a time in Libby Prison. At the time of his death Dr. Winston was medical director of the Mutual Life Insurance Company, of which his father, the late Frederick S. Winston, was formerly president.

THOMAS O'CALLAGHAN, M.D., one of the oldest and best-known practitioners of Jersey City, N. J., died suddenly of apoplexy on December 27th. He was born in Ireland in 1831, and was graduated from the College of Physicians and Surgeons, New York, in 1860.

BOOKS AND PAMPHLETS RECEIVED.

Report of the Surgeon-General, U. S. Navy. Washington. 1899.

Love and its Affinities. By George F. Butler, M.D. Chicago: G. P. Engelhard & Co. 1899.

Loveliness. A story by Elizabeth Stuart Phelps. Boston and New York: Houghton, Mifflin & Co. 1899.

Transactions of the American Gynecological Society, Volume XXIV, for the year 1899. Philadelphia: Wm. J. Dornan. 1899.

Coca and its Therapeutic Application. By Angelo Mariani. With illustrations. Third edition. New York: J. N. Jaros. 1896.

The Medical Digest, or Busy Practitioners' Vade-mecum. Appendix, including the years 1891 to March, 1899. By Richard Neale, M.D. (Lond.). London: John Bale, Sons & Danielsson, Ltd. 1899.

Notes on the Modern Treatment of Fractures. By John B. Roberts, A.M., M.D., Professor of Surgery in the Philadelphia Polyclinic, etc. With 39 illustrations. New York: D. Appleton & Co. 1899.

Original Articles.

A CASE OF PERFORATING GASTRIC ULCER; OPERATION; RECOVERY; WITH REMARKS ON THE SURGERY OF GASTRIC ULCER.[1]

BY F. B. LUND, M.D., BOSTON.

W. L., thirty years old, married, a laborer by occupation, was sent to the Boston City Hospital by Dr. J. H. Gavin, of Roxbury, on the evening of June 20, 1899, for operation for general peritonitis. He was admitted to the service of Dr. Abner Post, in whose absence the writer saw the case. His history was as follows: For a year or more he had suffered from indigestion, manifested chiefly by flatulency, eructations, and a dull heavy pain in the epigastrium, the sensation resembling that of a "load on the stomach," as he expressed it. There had been vomiting on rare occasions. For the last two months he had been taking care of one of his children, who had died of some thoracic trouble two days ago, and he had become exhausted. Last evening he had taken one glass of whiskey and one of beer, and had vomited, but his acute symptoms had not begun till 8 A. M. on the day of entrance, when he was seized with agonizing pain in the epigastrium, and vomited several times. The pain had continued without abatement all day, but there had been no more vomiting. He had taken no food during the day.

He was seen by the writer at 12 P. M., or sixteen hours after the attack of pain which undoubtedly signalized the perforation. At that time he looked pale and anxious. His tongue was dry and coated dark brown. He had tenderness and muscular spasm all over the abdomen, especially marked in the epigastrium. The pulse was 100 and strong, and the temperature normal. There was no abdominal distention, in fact the abdomen was retracted, but universal tympanites. The diagnosis was made of general peritonitis, probably originating in the epigastric region, perforating gastric or duodenal ulcer and acute pancreatitis being thought of, as well as appendicitis.

Under ether, after the usual preparations, an incision was made into the abdomen in the middle line above the umbilicus. On opening the peritoneum there was immediate escape of gas and light green-colored stomach contents. The incision was immediately prolonged till it extended from the ensiform cartilage to below the umbilicus. The anterior surface of the stomach and the small intestine were covered with a thin layer of fibrin, and as the flow of gastric fluid seemed to come from the pyloric region, a short cross incision was made and the wound retracted forcibly to the right, exposing a clean-cut ulcer about three-eighths of an inch in diameter on the anterior surface of the stomach, three-fourths of an inch to the left of the pylorus. The stomach above the ulcer was held by the thumb and forefinger of an assistant to prevent further escape of gastric contents, and by strong retraction of the wound toward the right sufficient space was gained to fold the ulcer in, the fold being arranged at right angles to the axis of the stomach, in order to prevent cicatricial contraction, and held by three rows of Lembert sutures of fine silk. As the first row could not be placed close to the ulcer on account of the friability of the infiltrated stomach wall, it was necessary really to fold the pyloric portion of the stomach over onto the first portion of the duodenum. Before suture the field of operation was washed with sterile salt solution and wiped dry, and the rest of the abdomen walled off with gauze.

After completion of the suture, another incision one inch long was made half-way between the umbilicus and symphysis pubis to drain the pelvis. The abdomen was washed out with hot sterile salt solution. There was a general peritonitis, the peritoneal covering of small intestines being inflamed and flakes of fibrin attached. Pus and fibrin flakes were found in pelvis and both lumbar regions. After thoroughly washing with salt solution, the pelvis was drained with three gauze strips and a glass tube. Through the upper wound a gauze drain was passed to the line of sutures and into the right and left lumbar regions. The wound was partially closed by sutures around the strips. Two ounces of Epsom salts were injected into the jejunum through a hollow needle, and the puncture closed by a suture. The patient bore the operation well and did not vomit on recovery from ether. In fact, he never vomited after the operation.

The treatment consisted of enemata of salt solution with brandy and strychnine during the first twelve hours, and after that, of nutrient enemata of peptonized milk, egg and brandy.

The bowels moved on the morning following the operation, but the man's condition was serious, as he was restless and weak, with rapid (130) and intermittent pulse. A little tincture of digitalis was added to the enemata, and the restlessness was markedly improved by morphine. The next day the pulse fell to 90, and from that time on his improvement was rapid and continuous. He was given hot water by mouth on the third day, and the gauze packing removed on the fourth day. Beef juice, beef tea and milk and lime-water by mouth were begun on the eighth day, and were well borne.

Sixteen days after the operation the rectal feeding was discontinued. Solid food was begun one month after the operation. The patient gained rapidly in weight and strength, and left the hospital on August 14th in excellent condition, with a small sinus discharging very slightly. This sinus, the persistence of which was the reason for keeping the patient in the hospital so long, healed within two weeks of his leaving, and he is now entirely well, and weighs more than he did when he left the hospital. He is entirely free from digestive disturbance. A culture taken at the time of the operation showed the presence of the streptococcus pyogenes and the bacillus coli communis in the peritoneal fluid.

The fortunate recovery in this case, although the operation was performed sixteen hours after the perforation, which, in my opinion, took place immediately with the onset of pain and vomiting at eight o'clock in the morning, may have been partially due to the fact that at the time the perforation took place there were no solid contents present in the stomach, as the patient had taken no food that morning, and the stomach had been presumably emptied by the vomiting which took place the evening before.

The location of the ulcer on the anterior surface was favorable to suture. The procedure adopted of folding in the ulcer, instead of attempting to excise the edges, seems to me distinctly the most satisfactory method in these cases. Excision would mean addi-

[1] Read before the Surgical Section of the Suffolk District Medical Society, November 1, 1899.

tional operative manipulation, management of hemorrhage, etc., which should certainly be avoided on account of the danger of spreading sepsis, in the presence of extravasated gastric contents, peritoneal exudate and pus. The patient's condition in general in these cases contraindicates indulgence in any technique which is more elaborate than essential. In placing the sutures it is well, when possible, to begin farther from the edge of the ulcer than one thinks is necessary, for the tissues are infiltrated to a wide extent, and the sutures will not hold unless passed through healthy tissues. Fine silk is the best suture material.

In regard to the importance of thorough irrigation and drainage of the peritoneum, I need add nothing to the views already expressed in my paper on general peritonitis a year ago.[3] The injection of saturated solution of Epsom salts into the bowel has in my hands had the happiest results, in producing an early movement of the bowels, and in those cases which have not immediately died of shock and sepsis the convalescence has seemed to me distinctly smoother and more comfortable than in the cases where it has to be omitted. Although not essential to success, as is the case with irrigation and drainage, it seems to me a distinct advance in treatment, and one which in a doubtful case may turn the scale in the patient's favor. It is especially important in cases which have gone on till the bowels are distended with flatus, although, unfortunately, cases of general peritonitis which have gone on till marked distention of the bowels has resulted are less apt to yield to treatment. In this case, although the presence of seropus and fibrin flakes universally over the small intestine showed that the peritonitis was indubitably general, the bowels had not become distended with gas and were empty and flat. Nor had the septic intoxication sent the pulse up to an alarming extent or greatly depressed the patient's general condition, all of which factors were favorable to his recovery. These facts emphasize the necessity of *early* diagnosis and immediate operation.

In looking up the subject of operation for perforating gastric ulcer, I have been surprised and gratified at the favorable showing made by recent statistics.

Statistics on such a subject as this without doubt give a more favorable showing than is actually the case, owing to the fact that there is little doubt that more fatal than successful cases go unreported. None the less, the improvement in results in recent years, due doubtless both to early diagnosis and improved technique, is extremely encouraging. Richardson, in Dennis's "System of Surgery," in 1894, collected 43 operations for perforating gastric ulcer, with 10 recoveries, or 23 per cent. Dr. Farrar Cobb has kindly placed at my disposal a table of cases subsequent to Dennis's table and carrying the time up to the spring of 1897. This table includes 98 cases, with 50 recoveries, or 51 per cent. Adding these two lists together gives 141 cases, with 60 recoveries, or 42 per cent. Now of these 141 cases, 45 were operated within twelve hours, with 35 recoveries, or 78 per cent., and 70 within 24 hours, with 44 recoveries, or 63 per cent.

I have since myself collected 40 additional cases, with 28 recoveries, or 70 per cent. Of these, 14 were operated within twelve hours, with 12 recoveries, or 86 per cent., and 26 within twenty-four hours, with 19 recoveries, or 73 per cent. Now, adding all the cases, we have the following result:

	Cases.	Recoveries.
Dennis (to 1894)	43	10 = 23 per cent.
Cobb (to 1897)	98	50 = 51 per cent.
Author (1897 to date)	40	28 = 70 per cent.
Total	181	88 = 45 per cent.

The improvement in these statistics with time, the progression from 1894 to 1899 being 23, 51, 70 per cent., is remarkable. Now, adding together those operated within twelve hours, we have:

	Cases.	Recoveries.
Dennis and Cobb	45	35 = 78 per cent.
Author	14	12 = 86 per cent.
Total	59	47 = 79 per cent.

Operated within 24 hours we have:

	Cases.	Recoveries.
Dennis and Cobb	70	49 = 63 per cent.
Author	26	19 = 73 per cent.
Total	96	63 = 65 per cent.

The results of published operations, therefore, show a surprisingly high recovery rate.

On examining the records of cases operated on days and weeks after perforation, we find an occasional recovery. This is due to the fact that perforation, whether the ulcer is on the anterior or posterior surface of the stomach, takes place not infrequently into a cavity walled off by adhesions, so that localized abscesses, subphrenic, perisplenic, etc., result, which are finally opened and drained, with an occasional recovery.

The history of these cases, however, is one of continued suppuration, exhaustion and emaciation, and not infrequently death, even after operation for drainage of the abscess with perhaps suture of the stomach. These abscesses have occasionally perforated the diaphragm and produced empyema, or even ruptured into a bronchus.

In cases where perforation takes place into the general peritoneal cavity immediate operation is essential to save life. In cases where the spread of pus is limited by adhesions operation at the earliest possible moment is indicated to prevent the gradual extension of the suppurative process, exhaustion and sepsis. Of 187 cases of gastric ulcer (Elliot and Joslin) treated at the Massachusetts General Hospital between 1888 and 1898 perforation took place in six, or 3.2 per cent., and was fatal immediately or ultimately in every case.

Since collecting the above statistics I have found a monograph by M. B. Tinker, now assistant to Dr. Keen, of Philadelphia, entitled "Die perforiende Magengeschwüre und ihre chirurgische Behandlung," being his Inaugural Dissertation for the Doctorate in Medicine and Surgery presented at the University of Berlin in July, 1899.

This paper is based upon an analysis of 213 cases, which have been collected from literature, and covers the subject thoroughly up to the present time. It is certainly the most thorough and complete presentation of the subject which I have seen, and it is gratifying to note that the results of his tabulation correspond closely with my own.

He tabulates 78 cases collected by Weir and Foote,[5] 78 cases tabulated by Keen, Cartwright Lectures,[4]

[3] Boston Medical and Surgical Journal, 1898, cxxxix, No. 10.

[5] New York Medical News, 1898, xviii, 49.

[4] Philadelphia Medical Journal, May 7, 1898.

and 57 cases collected by him from literature since that time, a total of 213 cases. The average mortality was 48.81 per cent. The mortality of Weir and Foote, 78 cases (previous to 1896), was 71, 51 per cent., while the mortality of the cases since 1896, 112 in number, was only 35 per cent. In the last three years, since 1896, of the cases operated within twelve hours, 16 in number, only three died, a recovery percentage of 82.36, which agrees closely with my own tabulation. For the analysis as to age, sex, situation of the ulcer and other important and interesting divisions of the subject, the reader is referred to the original paper. An interesting geographical table must be mentioned here, however, which shows that of the 213 cases, 142 were operated in England and her colonies. Germany contributed 26, the United States, 18, and France, 17. The first operation was performed by Mikulicz in 1880, and the first successful operation by Kriege in 1892.

While there can be no question of the absolute necessity of operating upon cases of perforating gastric ulcer at the earliest possible moment, there has lately been a somewhat remarkable accumulation of evidence to show that surgical aid should not be withheld from certain other cases of gastric ulcer which have heretofore been largely regarded as amenable only to medical treatment. The operations of pyloroplasty in cases of contraction of the pylorus from the contraction of the scars resulting from benign ulcer, of gastro-enterostomy or excision in cases of repeated and dangerous hemorrhage, or of continued vomiting unaffected by treatment, should, I believe, in the light of the perfection of modern technique, and of the unfavorable showing of recent statistics relating to the medical treatment of these cases, be oftener performed than they are at present.

The mortality of gastric ulcer has been estimated at from two to eight per cent. and the percentage of complete cases is given at from 85 per cent. by Welch, based on the result of autopsies, to 75 per cent., Ewald and Leube, and 50 per cent., Debove and Remond. But the figures given as the result of clinical investigation do not give a fair estimate of the number of cases, for the reason that no account is taken of the relapses which follow after the patients have passed from under observation.

Of especial interest in this connection are the results of the extremely valuable investigations of Greenough and Joslin,[5] into the condition of 114 cases of gastric ulcer at an average period of five years after their discharge from the Massachusetts General Hospital. The difficulty of following up hospital patients is so great that investigations such as this are rarely carried out, and the information derived from them is especially important. Of 187 patients treated at that hospital between 1888 and 1898, reports of the condition of 114 of these were obtained at an average time of five years after their discharge.

To quote from this paper, of 114 patients, 80 per cent. were discharged cured or relieved, but at the end of an average period of five years only 40 per cent. remained well. The mortality at the same time was 20 per cent. The mortality of eight per cent. and the failure of medical treatment to effect a lasting cure in 60 per cent. of the patients indicate the need of surgical intervention in other than emergency cases.

Surgical intervention in cases of hemorrhage has been objected to on the ground that the operation had a high mortality, about 61 per cent., while the majority of cases in which hemorrhage occurs are not fatal, as in fact hemorrhage is a symptom in about 80 per cent. of all cases. The mortality of operations for hemorrhage has been necessarily high because the operation has been performed as a last resort after grave anemia had been produced, and, in fact, often on moribund patients.

Although the majority of cases of hemorrhage from gastric ulcer do not require surgical intervention, we have every reason to believe that in cases of small and frequently repeated hemorrhage inducing grave anemia, or in severe and copious hemorrhage, lives might be saved if surgical aid were invoked before grave anemia threatened imminent death. Surgical aid in gastric hemorrhage, as in other abdominal emergencies, must be summoned early, in order to be effective in saving life. Into the various operative procedures applicable in hemorrhage it is not the purpose of this paper to enter in detail. Suffice it to say that excision of the ulcer, cauterization and gastro-enterostomy may be practised; the choice of operation must be made at the time, according to circumstances, situation of ulcer, size and position of artery, condition of patient, etc.

Another class of cases which should, in my opinion, be more often given the benefit of surgical treatment are those in which severe pain and vomiting continue unaffected by medical treatment, and in which progressive emaciation results. In these cases the more extensive and indurated ulcers, frequently attended with contraction of the pylorus and gastric dilatation, will have to be dealt with. Pyloroplasty, excision of the ulcer and gastro-enterostomy will here be the operations to be considered.

The mortality of gastro-enterostomy has diminished considerably within the last few years. Cutler and Elliot have estimated it at 30 per cent., and Mikulicz at 16 per cent. Bidwell[6] has collected 63 cases operated upon in the last two years, with a mortality of 64 per cent., which is certainly a remarkable reduction. With earlier resort to operation and greater familiarity with the technique on the part of surgeons, there is no reason why the mortality of operations for gastric ulcer should not diminish as remarkably as has that for appendicitis.

In operations for non-perforating ulcer we are not dealing with infected peritoneum, and modern technique and the use of gauze packing have enabled those skilled in abdominal surgery to perform extensive intestinal resections and the like with little fear of general peritoneal infection.

Operations on the stomach are not intrinsically more difficult than those upon the intestine; the greater part of the posterior wall of the stomach even can be brought outside the abdomen and operated upon extraperitoneally. The thick walls of the stomach afford better holding ground for sutures than the walls of the intestine.

If the operations for perforated gastric ulcer which are done within twelve hours of perforation show so surprisingly low a mortality, even in the presence of infected peritoneum, may we not hope to attain highly

[5] Gastric Ulcer at the Massachusetts General Hospital, 1888-1898. American Journal of the Medical Sciences, 1899.

[6] Bidwell: American Journal of Medical Sciences, September, 1899.

TABLE I.

No.	Operator.	Reference.	Sex.	Age.	Site of Perforation.	Time of Operation after Perforation.	Result.	Remarks.
*1	Kirkpatrick.	London Practitioner, 1897, lix, 157.	F.	20	Anterior wall near lesser curvature.	4 hours.	R.	Suture and drainage.
2	McCosh.	New York Medical News, 1896, lxviii, 459.	"	30	Lesser curvature.	36 hours.	D.	Quoted by Kirkpatrick.
3	Curtis.	New York Medical News, 1896, lxviii, 455.	"	34	Anterior wall near lesser curvature.	Days.	D.	" " "
4	Atherton.	New York Medical Record, 1895, i, 2.	"	20	Anterior wall near lesser curvature.	15 hours.	R.	" " "
5	Kirkpatrick.	Montreal Medical Journal, 1895, xxiii, 670.	"	24	Anterior wall near lesser curvature.	84 hours.	R.	
6	Weir.	New York Medical News, 1896, lxviii, 452.	M.	44	Anterior wall near pylorus.	48 hours.	D.	Quoted by Kirkpatrick.
7	Armstrong.	Montreal Medical Journal, 1896, xxiv, 505.	F.	20	Anterior wall.	18 hours.	R.	Quoted by Kirkpatrick.
*8	McCosh.	New York Medical News, 1897, lxx, 80.	"	35	Lesser curvature.	21 days.	R.	Encapsulated abscess.
*9	Weir.	" " " " lxvii, 449.	"	17	Anterior wall.	11½ hours.	R.	
*10	Curtis.	" " " " " 455.	"	35	Anterior wall near lesser curvature.	26 hours.	D.	
*11	Bell.	Montreal Medical Journal, 1897, xxv, 915.					R.	Quoted by Kirkpatrick.
*12	Bell.	Montreal Medical Journal, 1897, xxv, 915.					R.	" " "
*13	McCosh.	New York Medical News, 1896, lxviii, 459.	M.	40	Lesser curvature.	24 hours.	D.	" " "
14	Stimson.	International Medical Magazine, February, 1892.	F.	57	Anterior wall near lesser curvature.	100 hours.	D.	" " " Advanced peritonitis.
*15	Toogood.	London Lancet, 1898, 158.	"	21	Anterior wall.	Few hours.	R.	
*16	Renton.	British Medical Journal, 1897, ii, 453.	"		Anterior wall.	3 hours ±	R.	Reported by Adamson. Suture, irrigation and drainage.
*17	Renton.	British Medical Journal, 1897, ii, 453.	"		Posterior wall.	4 days.	D.	Suture, irrigation and drainage. Ulcer not found at operation.
*18	Anderson.	London Lancet, 1897, ii, 1,109.	"	16	Anterior wall.	21 hours.	D.	Five weeks later from bronchopneumonia.
*19	Anderson.	London Lancet, 1897, ii, 1,109.	"	19	Anterior wall (?).	32 hours.	R.	
*20	Michaux.	Soc. de Chir. de Paris, 1896, xxii, 222, 232.	M.	26	Anterior wall near cardia.	3 days +	R.	Peritonitis. Drainage.
*21	Anson.	London Lancet, 1893, i, 4; iii, 469.	F.	20	Anterior wall near lesser curvature.	24 hours.	D.	Cited by Pariser.
*22	Morris.	British Medical Journal, 1894, ii, 861.	F.	24	Anterior wall near pylorus.	4½ hours.	R.	Allg. med. Cent. Ztg., 1896, lxv, 1,033 et seq.
23	Morrison.	British Medical Journal, 1894, ii, 864.			Posterior wall.	2 hours.	D.	Ibid.
*24	Gilford.	London Lancet, 1894, ii, 1,369.	F.	29	Anterior wall near middle.	8½ hours.	R.	Ibid.
*25	Curtis.		"	34	Anterior wall near lesser curvature.	Days.	D.	Cited by Weir.
*26	Eve.	London Lancet, 1894, ii, 1,091.	"	22	Anterior wall near cardia.	61 hours.	D.	Cited by Pariser. Peritonitis.
27	Eve.	London Lancet, 1894, ii, 1,091.	"	18	Anterior wall near lesser curvature.	80 hours.	D.	Cited by Pariser.
*28	Franks.	British Medical Journal, 1894, ii, 865.	"	28	Lesser curvature.		D.	" " "
*29	Alt hinson.	British Medical Journal, 1894, ii, 864.			Posterior wall.	2 hours.	D.	" " "
*30	Silcock.	London Lancet, 1895, i, 1,252; British Medical Journal, 1895, i, 1,093.	F.		Anterior wall.		D.	" " "
*31	Dunn-Pitt.	London Lancet, 1895, i, 1,252; British Medical Journal, 1895, i, 1,093.	F.	15	Anterior wall near lesser curvature.	56 hours.	R.	" " "
*32	Weir.	1895. See Weir and Foote.	M.	44	Smaller curvature.	44 hours.	D.	" " "
*33	Paul.	British Medical Journal, 1895, 759.	F.	31	Anterior wall.	9 hours.	R.	" " "
*34	Horsley.	" " " " ii, 78.	"	20	Anterior wall near cardia.	26 hours.	D.	" " "
*35	Silcock.	" " " " 1,093.	"	24	Anterior wall near middle.	Hours.	R.	" " "
*36	Lundie.	" " " " i, 198.	"		Anterior wall.	10 hours.	R.	" " "
*37	Jowers.	London Lancet, 1895, 544.	"	24	Posterior wall near lesser curvature.	6 hours.	R.	" " "
38	Bowlby.	Weir and Foote.	M.	44		48 hours.	D.	" " "
*39	Stable.	St. Thomas Hospital Report, xxvi, 156.	M.	44	Posterior wall near lesser curvature.	9 hours.	D.	" " "
*40	Watson-Cheyne.	London Lancet, 1895, i, 253; Boston Medical and Surgical Journal, 1895, i, 693.	F.	17	Anterior wall.	48 hours.	D.	" " "
*41	Horrochs.	London Lancet, 1895, i, 413.	F.		Anterior wall near cardia.	12–15 hrs.	D.	" " "
*42	Lamphear.	American Journal of Surgery and Gynecology, 1895.	M.	48	Posterior wall near pylorus.	48 hours.	D.	" " "
*43	Maurice.	London Lancet, 1895, ii, 980.	F.	19	Anterior wall near cardia.	9 hours.	R.	" " "
*44	Maurice.	London Lancet, 1895, ii, 980.	F.	30	Anterior wall near lesser curvature.	19½ hours.	D.	" " "
*45	Hartmann.	Mercrédi méd., 1895, 163.	M.		Posterior wall near lesser curvature.		R.	" " "
*46	Quénu.	Mercrédi méd., 1895, 163.	M.	40	Near pylorus.		D.	" " "
*47	Pollard.	British Medical Journal, 1895, ii, 14.	F.	18	Anterior wall near cardia.	7½ hours.	R.	" " "
48	Parker.	Annals of Surgery, 1896, xxiii, 733.	"	25	Anterior wall.	?	R.	
*49	Gilb-Sourdille	Bull. de la Soc. Anat., 1895, 301.	"	49	Anterior wall near lesser curvature. Greater curvature.		D.	Cited by Pariser.
50	Heusner.	Verhandlung d. 24 Congresses, 1895, 39.					D.	" " "
51	Heusner.	Verhandlung d. 24 Congresses, 1895, 39.					D.	" " "
52	Borelius.	Arch. f. Verdauungskrafte, i, 218.	F.	33	Anterior wall near lesser curvature.	12 hours.	D.	" " "
*53	Pasteur-Morris.	London Lancet, 1895, ii, 1,573.	"	24	Anterior wall near greater curvature.	4 hours.	R.	" " "
*54	Selky.	" " " 1,348.	"	17	Anterior wall near lesser curvature.	24 hours +	D.	" " "
55	Steele.	" " " 264.	"	21	Anterior wall.	19 hours.	D.	" " "
56	Thomsen.	British Medical Journal, 1896, 1,329.			Lesser curvature.		R.	" " "
*57	Dent.	London Lancet, 1896, i, 1,718.	F.	26	Posterior wall near lesser curvature.	7 hours.	R.	
*58	Page.	" " " ii, 1,427.	"	28	Anterior wall near lesser curvature.	6 hours.	R.	
*59	Jowers.	" " " ii, 1,719.	"	19	Anterior wall near cardia.	3½ hours.	R.	

TABLE I (Continued).

No.	Operator.	Reference.	Sex.	Age.	Site of Perforation.	Time of Operation after Perforation.	Result.	Remarks.
*60	Morgan	British Medical Journal, 1896, 1,443.	F.	22	Anterior wall.	36 hours ±	R.	
61	Driart and Apert.	Bull de la Soc. anat. de Paris, 1896, x, 295.			Two ulcers.		D.	Cited by Pariser.
*62	Strauch.	Deut. med. Woch., 1896, 551.	F.	18	Anterior wall near cardia.	8 hours.	R.	Cited by Pariser.
63	Thomson.	London Lancet, 1896, ii, 11.	M.	45	Anterior plyorus.	6 hours.	R.	Death from pneumonia 17th day.
*64	Bennett.	" " " 310.	M.	32	Two inches from pylorus on lesser curvature.	5 hours.	R.	Closed by omental plug.
*65	Littlewood.	" " " 1,444.	F.	18	Anterior wall near pylorus.	7 hours.	R.	
*66	Littlewood.	" " " 1,445.	"	18	Anterior wall nearer lesser curvature and pylorus.	6 hours.	R.	
*67	Barker.	" " " 1,583.	"	20	Anterior wall near lesser curvature.	1½ hours.	R.	
*68	"	" " " 1,583.	"	24	Anterior wall near pylorus.	12 hours.	R.	
*69	"	" " " 1,584.	"	27	Lesser curvature near cardia.	7½ hours.	R.	
*70	"	" " " 1,585.	"	23	Anterior wall near cardia.	32 hours.	D.	Subphrenic abscess found post mortem.
*71	"	" " " "	"	23	Anterior wall near middle.	28 hours.	D.	
*72	"	" " " "	"	17	Anterior wall near lesser curvature.	12-17 hrs. ?	D.	
*73	"	" " " 1,586.	"	20	Near lesser curvature toward left.	3½ hours.	D.	
*74	Morse.	British Medical and Chirurgical Journal, 1894, i, 575.	"	20	Anterior wall near cardia.	5 hours.	R.	
*75	"	British Medical and Chirurgical Journal, 1897, i, 389.	"	21	Anterior wall near cardia.	4½ hours.	R.	
*76	"	British Medical and Chirurgical Journal, 1897, i, 390.	"	22	Anterior wall near cardia.	24 hours.	D.	
*77	Hawkins and Wallace.	British Medical and Chirurgical Journal, 1897, i, 914.	"	21	Anterior wall near cardia.	2 days +	R.	
*78	Makins.	Ibid.	"	17	Anterior wall near cardia.	24 hours.	R.	
*79	Clarke.	London Lancet, 1897, i, 806.	"	19	Anterior wall near cardia.	6 hours.	R.	
*80	Silcock.	London Lancet, 1897, i, 1,147.	"	25	Anterior wall near cardia.	24 hours.	R.	
*81	Mordly.	Bull. Soc. Anat. de Paris, 1897, lxxii, 904.	"	23	Anterior wall.	Days.	D.	Peritonitis.
*82	Dalziel.	Glasgow Medical Journal, 1896, xlv, 302.	"	36	Anterior wall near pylorus.	5½ hours.	R.	
*83	Finlay-Ogston	International Clinic, Philadelphia, 1896, iii, 73.	"	24	Anterior wall, lesser curvature near pylorus.	12 hours.	D.	End of 20 days.
*84	Lundie.	Edinburgh Hospital Report, 1896, iv, 485.	"	24	Anterior wall near middle.	10 hours.	R.	
*85	Wilcocks. (Morgan).	Clinical Journal, London, 1897-98, xi, 192.	"	27	Anterior wall near lesser curvature.	3 hours ±	R.	
*86	Strauch.	Deut. med. Woch., 1896, xxii, 551.	"	18	Anterior wall near cardia.	8½ hours.	R.	
*87	Horsley.	British Medical Journal, 1895, ii, 78.	"	20	Anterior wall near cardia.	26 hours.	D.	
*88	Walters.	London Lancet, 1895, i, 434.	"	20	Anterior wall near lesser curvature.	13½ hours.	R.	
*89	Helferich.	Deut. med. Woch., 1895, 451.	"	20	Anterior wall near cardia.	60 hours.	D.	
*90	Comte.	La Sem. Méd., 1895, 406.	"	y'g	Anterior wall near pylorus.	30 hours.	D.	
*91	Pollard.	British Medical Journal, 1895, ii, 14.	"	18	Anterior wall near cardia.	7½ hours.	R.	
*92	Sourdille.	Bull. Soc. Anat., 1895, 301.	"	49	Anterior wall near lesser curvature.	?	D.	
*93	Taylor.	Birmingham Medical Review, 1888, xxiii.	"	16	Anterior wall.	24 hours.	R.	[All earlier cases cited by Pariser and not quoted in or used in Dennis.]
94	Walter.	J. Chapt: Thèse de Paris, 1895.	"	17	Anterior wall 3 cm. from lesser curvature.	72 hours.	D.	
95	Pocet.	Ibid.	M.	36	Anterior wall near lesser curvature.	36 hours.	D.	
96	Le Dentu.	Ibid.	M.	42	Posterior wall near pylorus.		D.	
*97	Parsons.	Dublin Journal of Medical Sciences, 1892, 27.	F.	21	Anterior wall.	60 hours.	D.	
*98	Parsons.	Ibid.	F.		Anterior wall, smaller curvature near cardia.		D.	

satisfactory results in the non-emergency operations for ulcers of the stomach which threaten life from hemorrhage or resist medical treatment.

TABULATION OF CASES.

For first 43 cases see table in Dennis's System of Surgery, Vol. IV, p. 259.

Table of 98 cases collected by Dr. Farrar Cobb (Table I).

Table of 40 cases collected by author (Table II).

BIBLIOGRAPHY.

Dennis. System of Surgery, vol. iv, p. 259.
Tinker. Die perforiende Magengeschwüre und ihre chirurgische Behandlung., Berlin, Gustav Schade, 1899.
Weir and Foote. New York Medical News, 1898, xviii, 49.

TABLE II.

No.	Reference.	Operator.	Sex and Age of Patient and Situation of Ulcer.	Time.	Result.	Remarks.
1	Lancet, 1898, ii, 1761.	Furner.	F., 29. Anterior surface near pylorus.	6½ hours.	R.	Suture. Irrigation and drainage by second opening above pubes.
2	Boston Medical and Surgical Journal, 1899, cxl, 183.	Sherman.	F., 24. Not found.	17½ hours.	R.	Irrigation. Localized cavity. General cavity not involved.
3	Medical Press and Circular, 1899, xvii, 63.	Jones.	F., 19. Anterior aspect near pylorus.	3 hours.	R.	No peritonitis. No irrigation or drainage.
4	Ibid.	Jones.	F., 21. Anterior surface near cardia.	14 hours.	D.	Irrigation and drainage not stated. Death 14 days later from perisplenic abscess.
5	New York Medical Record, 1899, xv, 204.	Hartley.	F., 24. Posterior surface.	14½ hours.	R.	Irrigation and drainage.
6	Australasian Medical Gazette, June 20, 1898.	Clubbe.	F., 21. Anterior surface.	5 hours.	R.	Suture. Irrigation and drainage. (Quoted by Sherman.)
7	Ibid.	"	F. Posterior surface.	11 hours.	D.	Perforation found at autopsy. (Quoted by Sherman.)
8	"	"	F., 19. Anterior surface.	30 hours.	R.	Irrigation and drainage. (Quoted by Sherman.)
9	"	"	F.	4 hours.	R.	No details given. (Quoted by Sherman.)
10	Lancet, 1899, i, 372.	Morgan.	F., 27. Anterior surface near cardia.	8 hours.	R.	Suture. Irrigation. Drainage.
11	Ibid.	Morgan.	F., 27. Anterior surface near cardia.	24 hours, +	D.	Irrigation. Drainage not mentioned. Death in 24 hours from general peritonitis.
12	Australasian Medical Gazette, 1898, xvii, 477.	Bowker.	F., 38. Posterior surface near lesser curvature.	Within 12 hours.	R.	Suture. Irrigation and drainage by counter opening in right lumbar region.
13	Lyon Medicale, 1898, lxxxix, 4-3.	Rioblanc.	M., young. Anterior surface.	Not stated.	D. within 6 hours.	Suture. Irrigation and drainage.
14	Medical Press and Circular, 1898, lxvi, 561.	Wallis.	F., 20. Posterior wall near cardia.	10½ hours.	D. 31st day, hemorrhage.	No irrigation or drainage. Abdomen wiped out with sponges.
15	Lancet, 1898, ii, 1761.	Furner.	F., 37.	5 hours.	D.	Abscess had ruptured causing general peritonitis. Irrigation and drainage.
16	Ibid.	Furner.	F., 22. Anterior surface near cardia.	24 hours.	R.	Suture. Irrigation and drainage.
17	Boston Medical and Surgical Journal, 1899, cxxxix, 135.	Cabot.	F., 30. Lesser curvature.	24 hours.	R.	Suture. Drainage. No general peritonitis. Escape of gas, but no fluid.
18	British Medical Journal, 1898, ii, 1407.	Bush.	F., 26. Posterior surface near middle of lesser curvature.	26 hours.	R.	Suture. Irrigation of lesser sac. Death from syncope one month later.
19	Ibid.	Bush.	F., 24. Anterior surface near cardia.	18 hours.	R.	Suture and drainage. No irrigation.
20	Medical Press and Circular, 1898, lxv, 646.	Campbell.	F., 35. Lesser curvature near pylorus.	14½ hours.	R.	Suture. Drainage. No irrigation.
21	Lancet, 1898, i, 1323.	Anderson.	F. Anterior surface near cardia.	2½ hours.	R.	Suture. Irrigation and no drainage.
22	Lancet, 1899, i, 832.	Silcock.	F., 20. Anterior surface.	34 hours.	R.	Suture and drainage. Subsequent counter opening.
23	Glasgow Medical Journal, ii, 200.	Rutherford.	F., 26. Posterior wall near lesser curvature.	8 hours.	D.	Irrigation and drainage. Glass tube in pelvis.
24	Münchener med. Woch., September 13, 1898.	Garré.			R.	Perforation into rectus muscle.
25	Ibid.	Garré.			R.	Perforation into transverse colon. (Quoted by Sherman.)
26	British Medical Journal, 1898, ii, 84.	E. W. Roughton.	F., 20. Anterior surface near cardia.	13 hours.	D.	Suture with inversion. General peritonitis 7½ days. Abdominal cavity not irrigated. Drainage.
27	Medical Press and Circular, 1898, lxv, 576.	Bidwell.	F., 40. Anterior surface near pylorus.	20 hours.	R.	Inversion and suture. Irrigation of abdominal cavity. Drainage.
28	Lancet, 1898, i, 1,322.	Sharkey.	F., 33. Anterior surface near lesser curvature and pylorus.	4½ hours.	R.	Inversion and suture. Irrigation and sponging of abdomen and drainage.
29	Lancet, 1898, i, 565.	Bennett.	F., 16. Anterior surface.	2 weeks.	R.	Subphrenic abscess. Suture of perforation. Drainage of abscess.
30	Ibid.	"	F., 26. Anterior surface near cardia.	72 hours.	R.	Suture and drainage.
31	Ibid.	"	F., 30. Anterior surface near cardia.	48 hours.	R.	Suture and drainage.
32	Present Paper.	Lund.	M. Anterior wall near pylorus.	16 hours.	R.	Suture. Irrigation and drainage.
33	Medical and Surgical Reports of Presbyterian Hospital, 1897.	McCosh.	F., 21. Lesser curvature at middle.	11 days.	D.	Death six weeks or more later from pneumonia and pericarditis.
34	Canadian Practitioner, 1896, xxi, 194.	Ross.	F., 26. Posterior wall near cardia.	8½ hours.	R.	Suture. Irrigation and drainage.
35	Australasian Medical Gazette, 1897, xvi, 428.	Marten.	F., 20. Anterior surface near cardia.	6 hours.	R.	Suture. Irrigation and drainage.
36	British Medical Journal, 1898, i, 814.	Shaw.	F., 20. Anterior wall near pylorus.	12 hours.	R.	Suture. Omental graft. Irrigation and drainage. Second incision below umbilicus.
37	Personal communication.	Warren.	M. Near pylorus.	16 hours.	R.	
38	Medical and Surgical Reports of Boston City Hospital, 1899, 210.	Munro.	F., 21. Pylorus near lesser curvature.	24 hours.	D.	Irrigation and drainage. Died 4 days later from general peritonitis.
39	Ibid.	Munro.	F., 21. Cardiac portion.	4 days.	D.	Suture. Irrigation and drainage.
40	Mt. Sinai Hospital Report, 1899, 178.	Gerster.	F., 33.	7 weeks.	D.	Subdiaphragmatic abscess.

Keen. Philadelphia Medical Journal, May 7, 1898.
Greenough and Joslin. American Journal of the Medical Sciences, 1899.
Bidwell. American Journal of the Medical Sciences, September, 1899, cxviii, No 3.
Lund. Boston Medical and Surgical Journal, 1898, cxxxix, No. 10.

THE CASE METHOD OF TEACHING SYSTEMATIC MEDICINE.

BY W. B. CANNON, A.M., BOSTON,
Student, Harvard Medical School.

THE articles on methods of medical instruction recently published and the widespread interest aroused by the papers are the surface showings of an agitation at present deeply affecting the best medical schools throughout the country. Among many instructors there is manifest dissatisfaction with the traditional means of training physicians, a dissatisfaction rising apparently from the belief that the teaching of medicine has not been keeping pace with improvements in the teaching of other subjects. Discussion of old methods and earnest searching after new and more effective methods of preparing young men to be practitioners are consequently rife amongst us. The medical student catches the spirit of this agitation and notices features of his education which seem to him capable of improvement. From a student's point of view, therefore, the present paper on the teaching of systematic medicine is offered.

That clinical instruction alone is too haphazard and uncertain to form a basis for a complete and orderly course in medicine is recognized in most medical schools. The well-rounded preparation for practice which the student must receive demands, therefore, aside from the clinics, an organized course of study. With this conclusion, that more systematic instruction is needed than clinical material can afford, this paper is in agreement; the method by which such systematic instruction is given, however, it proposes to discuss.

Two general methods of teaching systematic medicine have hitherto prevailed, namely, by the didactic lecture, and by recitations on stated topics. Strong objections can be raised both to didactic lectures and to recitations as used in teaching medicine; but the methods have, as well, certain valuable features demanding respect. Manifestly, any alternative for these methods which will avoid their defects and include their merits will be doubly valuable. That the case method of instruction offers such an alternative for the prevalent teaching, it is the purpose of this paper to show.

Before the didactic lecture and the recitation system are considered more in detail, it will be well to have clearly in mind the nature of medical practice and the consequent requisites of medical training. Medical practice is an art, an application of accumulated knowledge and skill to a particular case. It has two aspects: that of observation, and that of interpretation and relief. The first aspect — that of observation — requires of the physician sharp insight in questioning his patient, skill in making a thorough physical examination, and shrewdness in judging human nature. The preparation for this side of the physician's work is preeminently clinical; the best training for the examination of the sick is actual practice in such examination by the student under the supervision of an instructor. Observation gives data. Now these data must be explained and in accordance with this explanation the patient must be rightly treated. In this second attitude as interpreter and helper, the physician brings to bear on the patient the heritage of the past of medicine in so far as this heritage explains the nature of the sickness, as a disturbance of normal structure and function, and provides principles for diagnosis, prognosis and rational treatment. In short, a doctor's work consists in examining disordered individuals, and in applying to them the judgment of a trained mind and a careful knowledge of previous art. If these trite statements need apology it is found in the desire for perfect clearness in the argument which follows. In this argument only the preparation for the second of the attitudes of the physician will be considered, namely, the education of his reason as an interpreter, and the provision of his knowledge as a helper. And first of all the question arises: Is the didactic lecture the most satisfactory and effectual method of drilling the mind to careful thought in diagnosis and prognosis, and of securing to the student definite and ready knowledge of accepted practice?

Among the objections to didactic lectures as a means of instructing the student of medicine, perhaps the least important is the contention that attendance on such lectures is not an economical use of the student's time. This objection, however, is more important in these days of the crowded curriculum than formerly, and is sure to become still more important as, with the advance of medicine, the demand on the student's time increases. The chief support of the objection lies in the fact that lectures on medical subjects present, in the main, only what can be found in the newest textbook. Now, in case the student does not take notes he sits as a passive listener. It is well within the bounds of certainty to affirm that the many points made every week in ten or fifteen lectures on different subjects cannot be fixed permanently in memory by hearing them stated only once. If this student makes up his deficiency, however, by reading his authorities, he is doing precisely what he might quite as well have done without spending time listening to lectures. But suppose the student takes notes of what he hears. Then, according to common testimony, he is so busy writing he learns at the time very little of the matter presented by the lecturer. The student, therefore, is merely accumulating reading matter, and of this he already has as much as he can well manage. Furthermore, he not unfrequently finds that his own inability or the lecturer's obscurity has resulted in notes not good enough to trust. In this instance, likewise, he must depend upon his books. The conclusion seems justified, therefore, that the student, driven to the textbook in spite of didactic lectures, will make better use of his hours by learning systematic medicine directly from the printed sources.

A more serious criticism can be brought against the lecture system in that it allows a slighting of study during a large part of the year and favors cramming for examinations at the end. Some instructors, indeed, seem to regard this condition as essential, and leave time in May for preparation for June examinations. And the students, as well, count on this cramming, for many of them stop attending clinical exercises in May, in order to study their accumulated notes for satisfactory grades. The ephemeral nature of knowledge gained under such circumstances is too well known to need emphasis. It does not become an organized and

convenient part of the physician's equipment; and in so far as the lecture system respects the examination paper, rather than the permanent and handy store of information, the grave charge of inadequacy can be brought against it.

By far the most important and most weighty objection to the lecture system, however, is its real inefficiency as a means of mental training for medical work. Since medicine is an art, the doctor's relation to his patient, as every one knows, is an *active* relation. It requires therefore not only a ready fund of information, but also a disciplined power of careful observation and thoughtful analysis. Now, the ability to practice an art well requires, as every one knows also, preliminary training in that very practice. Manual dexterity is not learned by hearing about it, nor does skill in debate come from reading descriptions. Why, then, should medical students be expected to reason clearly in medical matters, weigh conflicting evidence or draw just conclusions, when their chief practice is taking lecture notes? The passive attitude of listening does not demand of the students intelligent thought; it does not demand careful judgment; the sole requirement of the system is that they shall memorize sufficient facts to pass the examination. The effect of such a system can be shown by asking for a written discussion of a given case. In a recent trial of this sort the attempts of the students to explain the signs and symptoms described brought forth all manner of preposterous statements, illogical reasoning, and baseless conclusions. A systolic murmur was evidence of an uncompensated heart lesion, a liver large with amyloid degeneration was explained as passive congestion, and a tubercular peritonitis was interpreted as cardiac dropsy; and these results appeared at the end of a year of lectures on the subject and after careful clinical instruction in gathering data. The mere accumulation of knowledge does not imply the power of using that knowledge when occasion demands it, any more than the ability to read a foreign language implies the ability to speak it. This neglect to recognize the difference between the active and the passive attitude, and the necessary failure of the lecture system to drill the student to deal thoughtfully with the complicated conditions of real cases, expose the system most freely to objection, and the objection is of fundamental seriousness.

The merits of the lecture system, however, cannot be overlooked. It certainly permits a more systematic treatment of medicine than is possible with clinical cases as a basis. But also it has the greater virtue of giving the instructor opportunity to present his personal experience; to detail the practical points of treatment — the home devices for the care of the sick — not found in books; to illustrate the common failures and mistakes of young physicians; to describe his own ways of meeting emergencies which may make lasting impressions on the students. The skilful lecturer, moreover, can so emphasize the essential points and can illustrate them so effectively that they stand out prominent as the important and memorable facts around which later others may be gathered; and, finally, the spirit of the instructor, his personal influence, can be conveyed to the students more forcibly perhaps in discourse than in any other way. But how rare is such a lecturer! Instead of practical advice the students hear descriptions from the books, instead of illustrated essentials they get abstract details, instead of enthusiasm in the lectures they too often see the indifference born of frequent repetition.

The faults and difficulties of the lecture system have seemed so predominant that in some medical schools instructors have substituted for the lectures in their courses recitations on stated topics. Recitations share nearly all the merits of the lecture system; they allow systematic study, they offer occasion for the personal testimony of the instructor and for the introduction of practical details. But they possess, besides, positive advantages over the lecture system, worthy of note. In the first place, the student must learn from week to week during the year his topics for the recitations. This requirement alone has many important results, chief among which is the continual storing of the student's mind instead of the continual accumulation of his reading matter. This gradual acquisition of knowledge reacts in two ways: first, it makes clinical material more valuable, because the student brings to the clinics a more alert and intelligent attention; and secondly, the repetition of subjects and the association of facts gained thus by repetition tend to make the facts permanent possessions for the student, so that he is less likely to crowd his mind with evanescent information for examinations only. The study for recitations has the further advantage of making the student thoroughly acquainted with his authorities, and the value of these books for later reference is by this very intimacy greatly increased.

The recitations in themselves are also of noteworthy importance. They not only give the student opportunity to correct false impressions, they likewise serve to fix especially in his memory the more essential points of the topic studied. Moreover, the student coming to a recitation is in a proper state of mind to receive new information, or to hear the personal experience of the instructor, or to understand the reasons for emphasis on certain symptoms; for he comes with a mind already prepared with some knowledge of the subject — he has laid by his own efforts a foundation to build upon.

Although the recitation system has striking advantages, it has, as well, important disadvantages which must be considered. Diseases in text-books, like diseases in lectures, are abstractions; they are descriptions of averages or types with no body to give them reality. Now, without a concrete case in view, maintaining a lively attention and keeping the powers of the mind keen and active while reading a book so abstract as most treatises on practice is well-nigh impossible. And to memorize symptoms or points of differential diagnosis directly, without reference to natural relationships, is for most students a very artificial process. Indeed, in lieu of reason as a bond, rhyme or some elusive mnemonic is a common makeshift. Facts learned in this way are not linked in their sequence, they are not associated with the student's previous knowledge; only after much repetition, therefore, do they become a lasting portion of his mental equipment. Moreover, the same serious criticism lodged against didactic lectures for not training the mind to think carefully on medical questions or to deal wisely with the difficulties of a given case may be brought with equal force against the recitation system. It does not demand of the student what practice will demand of him as a physician; it is not, therefore, a satisfactory means of instruction.

The discussion thus far has shown that neither di-

dactic lectures nor recitations are wholly to be condemned or wholly to be commended. Serious faults and decided advantages can be found in either method. These faults surely can be avoided and these advantages retained by the use of proper means. The direct observation and study and treatment of sick people offers undoubtedly the most proper method of learning medicine; it is impossible, however, for students to have a series of real cases following in orderly sequence and existing merely for their instruction. But will not the most immediate substitute for such experience prove a satisfactory manner of teaching the logic of medicine and its necessary facts? Will not the use of a case method of instruction solve the difficulties?

How then can systematic medical training be secured by a study of cases? The answer to this question is at hand. Cases of all the types, variations and complications of almost every disease are to be found in hospital records or in records of the private practice of instructors. These records include a history of family tendencies, notes of previous illness, an account of the onset of the attack, the results of physical examination at the hospital, the story of the ups and downs in the course of the disease, the treatment with its modifications as the symptoms changed, and, in case of death, possibly the findings at autopsy.

Now, the intent of the proposed case system is, in short, to give the students printed data from actual histories. These data are then to be studied and analyzed by the students, who shall be required to consider in every detail the differential diagnosis, the principles of prognosis in the case, and the rational treatment. The students, after having studied the case, shall come to a conference with the instructor, in which all the points in a particular problem shall be discussed. Such in outline is the scheme of study.

A more explicit account of the proposed method will make its workings clearer. And in describing these details the three divisions — presentation, study and discussion of the cases — will be separately treated.

In presenting to the students the printed history and results of examination of a patient, the instructor can take care that only so much is stated as will stimulate the students to more careful thought and discrimination in their study. The treatment of the patient may be withheld and the students be made to prescribe treatment according to their diagnosis. If the illness ended fatally and autopsy was performed, the findings of the pathologist should be retained to correct inferences drawn from clinical data. In the study of a particular disease cases showing typical variations (as, for example, the different forms of typhoid fever), or cases illustrating the disease in various stages, or cases in which the real nature of the illness is obscured by complications, may be given out at the same time for purposes of comparison; or other diseases with similar symptoms (as meningitis and miliary tuberculosis in the study of typhoid fever) may be introduced to make a more searching demand on the discriminating powers of the student. Likewise cases showing signal instances of common errors and oversights, or bringing out little matters of practical treatment and domestic expedients, would be of great value. The presenting of cases is thus capable of the most elastic adaptation to the needs of the students, according to the judgment of the instructor.

With records of patients in their hands the students now begin their active investigation. It is supposed that their only preparation is a previous study of the scientific groundwork — anatomy, physiology, pathology and therapeutics — and that they have heard no lectures on the practice of medicine. That the students will have difficulties at the start, even with simple cases, is certain, but that work done for themselves is far superior, as training, to the acceptance of stated results from another is also certain. That mistakes in judgment and reasoning will surely be made is not regretted, for mistakes are often the most impressive teachers. First the student reads the history, then analyzes the relations of the symptoms, selects what seem to him the primary disturbances, and sets to work to make his diagnosis. He goes to the textbook for reference; he must study all the diseases which his case might represent in order to establish his opinion. If cases of different diseases, with similar symptoms, have been given him, he must compare them and discriminate between them, or learn the further examination necessary to settle the decision. He must be ready not only to detail the therapeutic indications in the case as it stands, but also to treat such complications of the course of illness as the instructor may suggest. The opportunity for individual study and support of special treatment, such as hydrotherapy, in relation to the patient under consideration, here presents itself. Meanwhile the student is incidentally picking up the etiology and special pathology of the affection. All this work which he does for himself on the data of an actual hospital case, his diagnosis, his opinions, his treatment, are subject to review in the classroom and will be criticised not only by his fellow students, who have studied the same case, but also by the instructor. This fact alone, wholly apart from the future value to him as a practitioner, is a strong incentive to careful preparation and sound thinking in advance of the conference.

The conference consists of a discussion of all the aspects of a given case or set of cases, under the direction of an instructor, who makes suggestions or expresses his own opinions as they seem necessary. The conference is a real conference, because all participants come to it with considerable knowledge of the subject already secured. The instructor first calls upon one of the students to state the case, on another to analyze the symptoms and venture a diagnosis, on another to present the differential points, on still another to suggest treatment. Meanwhile other students are asked for their opinions of statements made, or may voluntarily offer their criticisms. The various sources which the students have consulted are naturally brought together in the discussion, and a most valuable opportunity is thereby offered for comparing criteria of diagnosis and modes of treatment of different authorities. A second case brings material for noting similarities and differences, and with each additional instance the possibilities of comparison and generalization increase. Throughout the conference the instructor acts as moderator, guiding the discussion along profitable lines, correcting false statements, exposing the weakness of unsupported opinions, or suggesting hypothetical changes or modifying conditions in the case, which will compel the students to think quickly and accurately. The instructor must also be ready to answer from his own large experience many questions; this phase of the system is particularly valuable not only in keeping the instructor alert and keen,

but also in giving him an insight into student difficulties and shortcomings. Thus the student advances with his study; he learns to express himself clearly, he learns to judge precisely and definitely the data of medical cases, and in standing by his judgment in the conference he is strengthening the inestimable habit of intellectual self-reliance. And while his ability to reason closely and judge thoughtfully is thus being developed, and while he is gaining skill in analysis and synthesis, he is also gaining the other object of medical study, a practical working knowledge of the facts of medicine.

A comparison of the general characteristics of the case system already mentioned, with the merits and defects of the common methods of teaching, will bring out more distinctly certain special characteristics of the proposed scheme. The case system, in the first place, avoids the objectionable features of didactic lectures. The student does not spend his time duplicating his reading matter by lecture notes to be set aside for later study; he is learning his facts gradually throughout the year by actually applying them in his work. Instead of depending on his uncertain records of lectures, he is training himself by practical experience to use his books just as later he may have to use them in reference to his own patients. Not only does the system avoid these objections to didactic lectures, it has as well the positive advantages of both the lectures and the recitations. It shares with them the virtue of presenting the subject of medicine in an orderly and systematic manner, inasmuch as the cases are arranged to develop step by step the particular disease in all its various phases and relationship. It also, like the other methods, offers abundant opportunity for the instructor to emphasize essentials and to give his own observations, but with greatly increased value to the students, because the instructor's words go to minds already prepared by knowledge of illustrative cases. Finally, the spirit of the instructor, the element of personal contact, in shaping student ideals is surely revealed as a much stronger and more real factor in the free intercourse of the conference than in a formal lecture or recitation.

Every one of the merits claimed as peculiar to the recitation system, the case method will duplicate. In it, just as by reciting, the student is continually learning instead of taking notes and getting ready to learn. He has the same chance in the conference to correct false impressions that he has in the recitation. In supplying knowledge which will increase the value of clinics the study of cases is even superior to the study of text-books alone, since concrete instances make more definite and permanent impressions than disembodied descriptions. The student, with actual cases and their symptom groups in mind, is quick to detect the absence of a usual sign, or the presence of a rare condition, and these now become a part of his already acquired experience. And as for the pernicious method of learning medicine by cramming for examinations, the very nature of the study of cases forbids it.

The case system not only avoids the defects and includes the merits of didactic lecture and the recitation, the system also has qualities and possibilities which surpass in value the best features of either of the common methods.

The first of the distinct and peculiar characteristics of the study of cases is its power to rouse enthusiasm. Nothing is more significant than the attitude of students towards a medical problem on which a number are working together. For example, the following single case was by chance given to a class of students for discussion: A boy of seven years had no noteworthy illness until, at five years of age, he had scarlet fever, with acute nephritis in complication. He was seen six months before the present illness, when he had grippe, with acute middle ear. The urine at this time showed no evidence of nephritis. His general condition has been fairly good since.

The present illness began with vomiting and high temperature, 104°. He was seen by a consultant two days later. During these two days he had grown worse. The temperature had remained above 104°. The vomiting had continued at intervals, but was not so severe or frequent as at first. He had become apathetic, but complained of pain when handled. The bowels were constipated. The tongue was coated.

At the examination on the third day of the illness he was found fairly developed and nourished. Though somnolent, he could be roused and he cried out when handled. There was no retraction or rigidity of the head. The pupils were equal and reacted normally. The face was flushed. The breathing was rapid and superficial. The pulse was strong and rapid. Nothing was detected in the lungs except diminished vesicular respiration in both backs below the scapulæ. The cardiac impulse was felt in the fourth space just inside the *right* mammary line. It was somewhat increased in strength, the heart sounds were distinct, there was no murmur, the second sound was not accentuated, there was no impulse felt to the left of the sternum or in the epigastrium. The abdominal muscles were so tense that palpation was impossible, not from any localized tenderness but apparently from tenderness all over the abdomen. Rectal examination was negative. Urine was negative.

Opiates were required to relieve pain. There had been no vomiting for twelve hours. A large movement of the bowels followed the administration of calomel on the previous day.

Such interest as resulted, such debating among themselves as this problem of diagnosis alone aroused among the students would be absolutely impossible with the usual methods of teaching. Impressions made under such conditions, when the attention is naturally eager and keen, are deep and lasting. It is the particular patient, the concrete instance, that gives body and form to text-book abstractions, holds the attention, and stimulates the reasoning power. Neither the lecture nor the recitation stirs enthusiasm; the case system, however, is on record as having accomplished this result most successfully.[1]

The correlation of the scientific and clinical aspects of medicine is a second important possibility which the study of cases may claim. At the present time in most schools two years are spent on anatomy, physiology, pathology and therapeutics with their various branches. Rarely, however, is any connection between these subjects and their clinical bearings made clear. The subjects are studied and then pigeon-holed as finished work, while the student proceeds to learn symptoms and treatment anew, not in any relation to what he has already learned, but as something apart and unrelated. With a good leader, however, and the habit of careful thought established among the students, the underlying pathological condition, the disturbed physiology,

[1] Vide infra.

the therapeutic action of the drugs employed, could constantly be brought forth to give the cases a rational explanation and to teach the students the deeper insight which vision through general principles affords.

By far the most important aspect of the case system, however, is its great value in drilling the mind of the student to meet intelligently the difficulties of practice. With present methods of instruction, skill in logical thinking, which makes a knowledge a power, is not infrequently sacrificed or impaired by the strained effort at accumulating the very knowledge to be used. How many students will exercise independent judgment or do critical reading while preparing for a recitation a dozen pages of any standard work on practice? To be sure, such preparation in some instances develops an extraordinary ability to memorize; but the mind is thereby only burdened with an unwieldy multitude of facts, while there is not the slightest necessity for any effort at real intellectual construction. Instead let the students have a number of cases with similar symptoms, but with peculiarities and complications, and can any student fail to puzzle over them and study them? And having studied them will not the conference at which his diagnosis and treatment are either confirmed or questioned mean more to him and produce a more lasting impression than any lecture? To deal with cases, to draw correct inductions, as an interpreter, from his data, as an observer; to apply proper treatment — these make the work of a doctor. The clinics train the medical student in observation; nothing at present requires him to look carefully on all sides of many cases, to think clearly and accurately, or to have reasons for his conclusions. Are not these powers among the most indispensable qualities of a physician? If so, the method bringing these faculties into constant use and discipline, and at the same time demanding the most thorough and precise knowledge, is certainly best adapted for the study of medicine.

Criticisms undoubtedly can be brought against the method of teaching above described. Some may assert that devotion to a printed record is, in itself, an unpractical way to learn to practise medicine. Although it is conceded that such preparation is not so effectual as real care of the sick, yet the objection may be met in part by the greater system and completeness assured by the case method of instruction than is probable in an experience with a shifting throng in the hospital wards; but more particularly is the objection answered by the fact that, with the hospital experience necessarily excluded from the undergraduate years, the study of actual cases is certainly more practical than the present lecture system or the recitations. Indeed, under prevailing methods, it is a wonder that the dangerous tendency of inexperienced minds to vague and fantastic theorizing is not more prevalent. To such a tendency an effective check is certainly present in the discussion of the cases, for one student's weakness meets another student's strength and the instructor is a practical man. Moreover the case method is not meant to replace clinical instruction. At the clinics the students are drilled by their corrected efforts to secure, by thorough and discriminating observation, reliable clinical data; with the cases they are drilled by their corrected efforts to judge with care exactly this same sort of data. The two methods thus go hand in hand with mutual benefit: the clinics keeping the student in touch with human life and training him to note its variations; the cases pointing out what to watch for, showing the importance of complete examination, and teaching how to interpret observations as they are made.

A second objection that may be urged is, that the case system requires more time than the strictly text-book systems. So far as the consideration of a certain number of topics is concerned, this objection is admitted to be valid, but that the proposed system requires a longer time to discipline the mind for the successful practice of medicine is flatly denied. First, the particular points learned while studying one narrow subject are a small part of the total acquisition. Many diseases not directly connected with the disease under consideration may be involved or suggested, and these the student can exclude, or accept as possible conditions, only after careful research. The points thus incidentally learned are fixed in the mind as they never could be by disconnected reading or by lectures, for instead of being presented as independent facts they occur as an integral part of a living problem. More important, however, than this casual acquisition of knowledge is the fundamental training which the method assures the student exactly along the lines which his future labors as a physician will follow. To meet the criticism of his classmates in the conference he must be careful to analyze his data, discriminate shrewdly, and judge fairly; he is led to use every means to fortify himself either for his own instruction or to answer his critic, be it professor or fellow-student. Thus before graduation he is acquiring that ready store of information, that facility for quick and accurate thought, that abundance of resource, which mark the best physicians; while the student of the text-book methods only begins to realize the value of these talents after he has ceased to be a student and has become a practitioner.

The question of the practicability of the whole scheme here outlined has probably arisen many times long ere now. Is not the plan all theoretical? Is there any instance of the use of the system to justify the claims made for it? The fact of presenting cases in medicine for purposes of conference cannot be gainsaid. Every district medical society uses records in precisely the manner of the proposed system whenever a member reads a paper describing an experience in his own practice. The only difference here lies in the nature of the discussion which follows; the students must speak from a common study of the same hospital reports, the doctors have their own past experience to draw upon. Moreover, the value of a discussion of cases in showing the practical powers of the physician is also recognized. In certain courses full accounts of patients are set on examination papers, with a requirement that the candidate shall analyze the symptoms, make a differential diagnosis and give the prognosis and treatment. Now if such a method is employed to test a man's ability to think clearly and apply his knowledge accurately in medical practice, is there any reason why it is not just as applicable in training him for exactly the same work? Indeed the case system, as here described, is already used in part in medical education. The few instances of this partial use of the plan, while only indicating its possible importance, are particularly significant. The obstetrical conferences in the course in obstetrics in the Harvard Medical School offer a striking example of the conference phase of the case system. At these conferences students read their hospital records of their own experience in obstetrical cases. These records are selected by the instructor so as to develop

the subject and to bring out its complications and difficulties in a perfectly orderly and systematic fashion. Each report of a case includes a full description of the conditions present and a detailed account of the handling of the situation. If the listening students in the conference knew but little of the subject, the reading of a report would not be unlike the reading of a lecture. But the listening students themselves have had similar experiences, and, instead of sitting with minds dulled in receptivity, they are alert and actively following the account in order to question the reader on his methods, his opinions, his results. And when the students fail to bring out all of the important points in the case, the instructor, a practical man, indicates the significance of the unnoted features. Such is the recognized value of this discussion of the actual conditions of practice that any question of the possibility of successfully applying the case method in medical instruction is here completely answered.

Undoubtedly the most brilliant example thus far of the use of cases in education is seen in the study of law.[1] The change from the text-book to the case system wrought out in the Harvard Law School has been called America's greatest contribution to educational reform. The newer method has roused an ardor and a keenness of interest among the students such as was never known before. They learn their law not by dreary grubbing at text-books or lecture notes, but by vigorously "threshing out a case" with one another. And for its methods and for its results the Harvard Law School is regarded by competent observers[2] as perhaps the foremost centre of legal education in the English-speaking world.

The case method is simply another application of the inductive method to teaching. The inductive method holds its strong position in education to-day because it requires of the student accurate judgment, close reasoning, precise expression and wise employment of his knowledge. It is a method which demands for a long period a student's best endeavors in the full use of all his faculties, but it rewards him with a strength and self-reliance unattainable in any other way. He learns, on the one hand, to avoid smartness and claptrap diagnosis, and on the other, the routine thoughtlessness of the "practical" physician. The method is practical; it will turn out practical men in the best meaning of that term.

Clinical Department.

A CASE OF RELAPSING FEVER.

BY GEORGE O. WARD, M.D.,
Visiting Physician to the City Hospital and Memorial Hospital, Worcester, Mass.

RELAPSING fever has not been epidemic in this country since 1869, when it appeared in force in Philadelphia. The statistics and data of this epidemic, as investigated and reported by Parry, appear in standard medical literature. Sporadic cases are so rare as to be of exceeding interest. For this reason the author has chosen to report this case to the JOURNAL. I wish to say at the outset that this uncommon diagnosis was not made because of any partiality therefor on the part of myself or my house officer, for we were forced to our conclusion in differential diagnosis by rigid exclusion of other possible causes for the initial rise of temperature, and only convinced by the punctual appearance of the relapse.

The patient, a young Armenian immigrant, eighteen years old, had just arrived, on August 9, 1899, with his mother, direct from Turkey-in-Asia, via England. They had been five weeks on the journey, thirteen days of which were taken in the passage from some English port to New York. Neither he nor his mother could speak a word of English. Hence all data had to be obtained through the interpreter. Both were very sick on board ship, whether from *mal-de-mer* or an initial paroxysm of this fever I have not been able to decide. But both mother and son were taken sick on the same day after arrival in Worcester, with like symptoms. The former remained with friends for four days, when she entered the Memorial Hospital; the latter entered the City Hospital at once.

The crisis of the mother's fever occurred simultaneously with that of her son. She did not have relapse; but, in view of the evident intimate connection of the two cases, I think it fairly probable that the illness of both previous to landing may have been the initial run of the fever.

August 10th. The son, on his entrance into the City Hospital, showed physiognomy characteristic of his race. His previous medical history was negative. His habits were good, and he denied venereal disease. Yesterday he had very severe headache and slight diarrhea. Later he had severe chill, high fever, with much muscular pain. Later still, in the evening, he had profuse epistaxis, to control which both nostrils had to be plugged. At his entrance, his temperature was 104°, his pulse 100, his respiration 22. His expression was dull and apathetic. His skin was moist and very dark, suggesting jaundice. No eruption of any kind was to be seen on his body. His pupils were normal. His nostrils were plugged, and epistaxis followed any attempt to remove plugs. His tongue was dry, with brown coat. Sordes were on teeth, lips and gums. Heart and lungs were negative. There was no tenderness of abdomen, but both liver and spleen were easily palpable. Reflexes were sluggish. There was no edema. The urine was negative, the diazo reaction being absent. The patient was put on diet of liquids and ordered to have baths when temperature is above 102.5°. Ice cap was applied to head. Strychnia, one-sixtieth grain every four hours. The temperature was ordered to be taken and charted every four hours, as is our routine.

August 11th. The Widal reaction is negative, and the diazo also. Plasmodium malariæ was looked for but was not found. Leucocytosis, 6,200. Plugs were removed from nostrils. No epistaxis followed. Temperature was still high, and patient was very apathetic but not delirious.

August 12th. Temperature was still above 105°, and baths had little effect; pulse was not of good character. Spiritus frumenti, two drachms ordered every four hours. Slight epistaxis. Patient looked bad.

August 13th. Between eleven last night and three this morning, patient's temperature fell from 104.8° to 97.2° (nearly 8° in less than four hours), and his

[1] See Keener: American Law Review, xxviii, for an excellent account of the workings of the method in law. The writer is indebted to this article for suggestions.
[2] Nation, June 8, 1899.

pulse simultaneously fell from 110 to 68. There were no signs of collapse, and pulse was of good character. Sweating was *very* profuse. Examination of chest was negative, as also was a second serum examination. Leucocytosis, 500. Patient brightened up during the

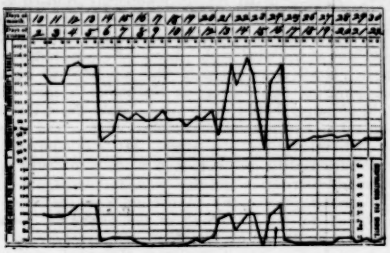


Chart of this case.

day and at night was feeling fairly comfortable. Constipation.

August 16th. Temperature soon rose to between 99° and 100° and has continued so. Pulse has continued at about 70. Stimulants were omitted. Patient seems comfortable and takes interest in surroundings. Shows signs of hunger. Denies subjective symptoms.

August 21st. Patient has been feeling pretty comfortable since date of last note. Has been on diet of semi-solids, and has been allowed to sit up a little in bed. His skin appears to have cleared as though he had been previously jaundiced. This afternoon his temperature shot up again from 97.8° to 105.5° (rising nearly 8° in less thane ight hours), but without marked subjective symptoms. Leucocytosis, 12,000.

August 23d. Temperature has remained persistently high since last note, until 11 A. M. to-day, when it fell by crisis from 105.5° to 96° (falling 9.5° in less than eight hours). He perspired very profusely and showed more evidence of collapse than in previous crises, so that some stimulant was given. He complained of no symptoms, but during all this relapse he has been very apathetic. The blood has, during this relapse, been examined daily for the spirillum Obermeier and plasmodium malariæ but without success.

August 24th. Between three and eleven this forenoon temperature rose again from 97° to 105.6°, and,

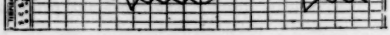


Chart of Murchison.

after continuing high for four hours, fell again to 95.6° (a drop of 9° in less than eight hours). This crisis, like the others, was accompanied by profuse sweating. Patient is very apathetic, with fair pulse at 60.

August 25th. During last night the patient's temperature fell to 95.2°, but this forenoon it is 97°. The patient looks brighter and has no symptoms.

September 1st. For the six days after the last note, patient carried subnormal temperature, averaging about 97°, as recorded on four-hour charts. Yesterday and to-day the temperature has ranged in vicinity of 101°, without symptoms. Patient has improved much in general condition. Complains much of hunger, and is to-day allowed to get up and eat house diet. Leucocyte count normal.

September 9th. Convalescence was steady from last date and patient was this day discharged well.

The above notes present a clinical picture fairly typical of relapsing fever. The temperature chart, as depicted in the authorities, is so striking and so utterly unlike that of any other disease, that I wish to exhibit one from Murchison in comparison with that of the case above described. The "abrupt crisis, characterized by prodigious and sudden fall of temperature unequalled in any other condition of disease" (Murchison), is still more graphically shown by our four-hour chart, from which record I have verbally quoted in the notes. But if the chart of the case just reviewed be properly superimposed on the chart of Murchison they will be found to agree so strikingly that one can hardly suggest that they can arise from cases dissimilar in nature.

The failure to detect the spirillum of Obermeier is not remarkable, as it was not looked for until the relapse, and it may not have been present. If the spirillum had been found, I think it would have been only regarded as evidence comfirmatory of a diagnosis otherwise well established by clinical phenomena and a typical temperature record.

I wish to hereby acknowledge my indebtedness to my house physician, Dr. George A. Dix, for his faithful study of this case and for his careful clinical notes taken thereon.

ON THE TREATMENT OF PAIN IN TABES DORSALIS; REPORT OF A CASE.

BY ALFRED H. LINDSTRÖM, M.D., BOSTON.

The temporary amelioration and suppression of pain occurring during the crises of tabes dorsalis by the use of appropriate chemicals and drugs is, no doubt, readily accomplished. But the repeated and frequent use of analgesic chemicals, especially coal-tar derivatives, is unquestionably deleterious to the general health of the patient, and since the successful management of a tabetic patient demands the most careful attention to his general health and his constitutional resistive powers, it is obvious that such medication should be avoided as much as possible. Methods of diminishing and alleviating the intensely distressing pains of tabes, not involving injury to the general health, would therefore seem to merit attention. A number of mechanical procedures have been suggested, and used with more or less success, such as surgical and postural stretching of the sciatic nerves, suspension, various forms of counterirritation, including the use of static sparks, other forms of electricity, direct pressure on the sciatic nerve, the use of friction with ice, ice in other forms, hot baths, cold douches and sprays to the spine, etc. Because of the marked success resulting from postural or mechanical stretching in the following case, its publication would seem justifiable.

The patient, a business man, is forty years old. About ten years ago he began to have pains in the legs, chiefly below the knee, occurring in irregularly recurring periods of increasing severity. They were thought to be of rheumatic origin, since damp weather seemed to cause them. Antirheumatic treatment was, however, of no avail, and the attacks grew more painful, and although a considerable interval of comparative comfort would supervene occasionally after a bad attack, the frequency of recurrence seemed to increase. This state of affairs lasted about nine years, during which time the cause of the pains remained a puzzle to the patient and his numerous medical advisers. The patient exhibited a remarkable degree of endurance throughout this period, generally refusing the use of any remedies suggested for the relief of his acute suffering, fearing that he might contract some drug habit, or that his general health would be affected by their use. As the intensity of his suffering increased, however, and reached beyond his limit of endurance, he finally resorted to the free use of whiskey, drinking large quantities during the attacks. No other symptoms appeared until about a year ago, when after three weeks of unusually severe mental and physical exertion, due to business enterprise, he noticed unsteadiness of walking in the dark. This he accounted for by the very free indulgence in whiskey, induced by the unprecedented intensity of the pain about this time. Other symptoms now developed in rapid succession; a distinct girdle sensation, or feeling of constriction about the waist, puzzled him greatly, and slight urinary defects were noticed. His gait was impaired, and walking without help became difficult.

After this rather rapid advance of the disease the patient had to abandon his business and, determined on a stubborn fight against his physical decay, he gave his entire attention to the care of his health.

About six months later the patient came under my observation. Physical examination showed absence of both knee-jerks, even on re-enforcement, lack of pupillary reaction to light, and marked typical ataxia of the legs. Sensation was affected in toes and feet but otherwise normal. The patient could not maintain his equilibrium with closed eyes, even when standing with feet apart. There was no impairment of vision, no trophic changes, and the muscular strength of the legs remained normal. Sexual function not affected. The patient was nervous and easily startled; but barring the presence of traces of acute suffering in his face, he presented a clearly cut and well-proportioned physical makeup. He never had chancre or gonorrhea; married ten years ago, and has a healthy boy eight years of age. The initial pain began before marriage. Had a fall from a height of about four feet, striking on his back, about thirteen years ago; suffered from pain in the back some time afterwards, but recovered entirely from immediate effects of this fall in a comparatively short time.

The most urgent need of the patient at this time was immediate relief from his suffering. The pains were so severe as to entirely prevent sleep; for more than ten days sleep had been badly interrupted, and during the last two nights the patient was utterly unable to secure a moment's rest. His wife feared that he would commit suicide, or become insane, his actions were so strange. He would scramble from one room to another, busying himself with anything he could think of, often something absurd or trivial, trying to forget his pain; he would clutch his legs, shake his fists, and go through weird physical contortions; shortly speaking, he was actually frantic with pain, and tried to escape his torments, but could not; he described the pains as instantaneous streaks of intense heat tearing through his legs, making him wince and cry. In spite of all this, he stubbornly refused to accept any opiate, or any other analgesic remedy; he had now been cautioned against the use of alcohol, also, and was at his wits' end. Lack of sleep and the repeated shock from the pain had produced an imprint of suffering and distress on the patient's face which told his story better than words could do. The case offered an exceptional opportunity to test the efficacy of some mechanical procedure. (It is my impression that various attempts had been made to procure relief by counterirritation and the use of liniments, but without success, prior to my connection with the case.) I resolved to try stretching of the sciatic by posture, namely, by flexion of the thigh and extension of the leg and foot.

On the 17th of October, 1898, I applied the first extension or stretching; I kept each sciatic nerve in a state of tension during two minutes. At the expiration of this time the patient complained of numbness of the feet and slight distress, due to tension, in the popliteal space. The patient remained in bed quietly about half an hour after the operation, chatting pleasantly, and entirely free from pain, but the numbness of the feet persisted. On attempting to walk it was noticed that the ataxia of the legs had increased considerably, so much so that the patient feared to attempt it alone. This was probably due to the anesthesia (numbness) of the feet, since the gait improved with the disappearance of this symptom the following day. During the night the patient had several hours of sound sleep, but woke up early in the morning with acute pain, although not as severe as the previous night. In the afternoon another stretching was performed, the procedure lasting about three minutes to each leg. The immediate results were the same as on the previous day, with, possibly, a trifle more pronounced numbness and uncertainty of movement of the legs when attempting to walk. The absence of pain was more complete, and seemed almost phenomenal. The patient slept well throughout the night, and received me in a state of high glee when I made my visit on the afternoon of the following day. A third application of the method was made, two minutes to each leg being thought sufficient. It was agreed that if severe pains should recur, I was to be informed, and another operation performed the following day, otherwise it was thought best to defer further treatment until at least two days had elapsed. The condition of the patient remained satisfactory, however, and the next stretching was done on the afternoon of the second day after the previous visit; the fifth and last operation was performed after the lapse of another forty-eight hours, during which time the patient had been practically free from pain.

The subsequent history of this patient has been very satisfactory. He has had a few light attacks of pain during this summer, usually caused by too much walking, climbing of hills, getting upstairs too many times a day, or, generally speaking, by injudicious physical exertion.

The general treatment of this case consisted of large, increasing doses of iodide of potash, administered

periodically, free use of artificial Marienbad water, cod-liver oil, systematic co-ordination exercises, open-air life as much as possible, and careful hygiene, including daily sponging with diluted alcohol, followed by brisk friction and slapping of the skin. He was also directed to abstain from coffee, tea, alcohol, tobacco and sexual intercourse, until material improvement had occurred. He was a very conscientious patient and lived up to the rules faithfully. The iodide was not given as a specific remedy, since there was absolutely no evidence of specific disease, either in the history or in the physical examination. It was given empirically for whatever effect it might have toward combating the progress of the malady through its eliminative action, and for its action upon the glandular system; the indication for its use was based upon the assumption that in this case the pathological changes of structure evidently going on were possibly due to the effects of autotoxicity, dependent upon disturbed nutritive functions. The Marienbad water was given for the same reason, namely, its eliminative and corrective effect. There was absolutely no tuberculous tendency in this case, but the cod-liver oil was suggested largely as an article of diet, to bring nutrition to as high a degree as possible; the oil was taken without objection and there was no digestive obstacle.

The exercises were so devised as to involve movements related to and associated with walking and balancing, and were practised on a slowly progressive scale. I mean by that, that one set of exercises was adhered to until they were done with nearly perfect co-ordination.

The patient was last seen by me on the 30th of September, and he presented a very satisfactory appearance. He had gained seven pounds in weight; his walking was fairly good, and the pains were of only trifling degree. He could turn about quickly without fear of falling, and walked across a busy street in my company without any assistance, except a cane, which was useful to him, no doubt, but not absolutely necessary.

The almost phenomenal cessation of pain immediately after the stretching may, of course, possibly be explained by assuming the two events as a mere coincidence. If so, it was a very happy one for the patient. To attempt a satisfactory, rational explanation is perhaps a difficult or impossible task. Whether due to physical changes in the peripheral part of the nerve fibres, such as elongation, for instance, diminishing their conductivity, or local compression in the region of the pelvic exit, or to both, or to other changes; or whether due to changes in the more centripetal part of the nerve, or in the cord itself, such as alteration of the ordinary anatomical relationship of nerve fibres and nerve cells, or of nerve cells and their processes, impairing their power of conductivity and transference of nerve impulse, is obviously impossible to decide. But if it is accepted that the pains are due to the presence of irritating toxins, producing an inflammatory or degenerative process in the nerve elements, then it would seem plausible to ascribe the cessation of pain to lessened conductivity of the sensory neuron, resulting from probable alteration, presumably temporary, in its structure, since it is evident that putting the nerve in a state of tension could not in any way influence the primary cause of the pains, but would affect the structure of the tissues in a mechanical way.

A fact worth noting in connection with tabes, and to which Dr. James J. Putnam has called attention, is the extreme flexibility of the hip-joint at an early stage of the disease. In this case, although in a comparatively early stage of development (conclusive tabetic symptoms having been present only a few months), the degree of flexion obtained was amazing, and greatly surprised the patient. Having flexed the thigh close to the abdomen, I succeeded in bringing the patient's leg and foot on a level with his face, which position was maintained during two and three minutes, respectively, as stated above. In doing this, great care was taken not to use undue force, or any sudden pressure. I mention this because in text-books, where this treatment has been spoken of, the stretching has been described as being accomplished by a *sudden* extension of the leg upon the thigh, after flexion of the latter. Such a sudden maneuvre would be dangerous in a tabetic patient, whose bones are apt to be fragile and liable to fracture. Also, the danger of subluxation at the hip-joint during such extreme flexion should be borne in mind and guarded against. I have recorded this case at some length, because of the successful results obtained, because of the complete absence of any medication for pain, and, also, because of the opportunity for continued observation for a considerable period after treatment afforded by it.

Perhaps it is unnecessary to state that it is not my intention to challenge the usefulness of the many very effective analgesic remedies *in toto*; I merely wish to present the facts in this case for what they may be worth in connection with the treatment of pain due to tabes and kindred affections.

A PISTOL WOUND OF THE ABDOMEN.

BY C. A. ATWOOD, M.D., TAUNTON, MASS.

J. McM., age twenty-eight years, single, occupation, painter, was suddenly awakened from sleep at 1.45 A. M., Tuesday, November 21, 1899, by the presence of his brother-in-law, who had obtained entrance to the house by means of ladder and window. The brother-in-law immediately discharged a revolver, the shot taking effect in McM's abdomen. He was removed to Morton Hospital between 3 and 4 A. M.

Physical examination.—Pulse very weak, 150; skin ashy; cold perspiration. Left side of abdomen in mammary line below costal cartilages showed a powder burned area about two inches in diameter surrounding an opening, size of pistol ball. Diagnosis: Pistol wound in abdomen. I saw the patient about 4 A. M., and advised an immediate laparotomy. The patient was etherized and an incision made in the median line between ensiform cartilage and umbilicus. The stomach was pulled into the wound, near greater curvature at pyloric end on the anterior surface; a perforation was found and closed by suture. Incision carried half-way between umbilicus and pubes. The small intestines were found perforated seven times, and the holes closed by Czerny-Lembert sutures. The intestines were thoroughly looked over on a hot sterile towel and no more perforations found. An opening was then made in the peritoneum between the transverse colon and greater curvature of the stomach; a perforation on posterior wall of stomach found and sutured. There was some hemorrhage and moderate amount of blood in abdominal cavity from injured mesenteric vessels; these were secured. The abdominal cavity was flushed

with boiled water and filled with salt solution. The wound closed tight; antiseptic gauze dressing applied.

Patient died at 10 P. M., after all means to rally him from the shock had been tried and failed.

Autopsy by medical examiner. — Death from shock. All perforations closed. The pistol ball had perforated the iliacus muscle and was found resting against the ilium.

Reports of Societies.

SURGICAL SECTION OF THE SUFFOLK DISTRICT MEDICAL SOCIETY.

F. G. BALCH, M.D., SECRETARY.

REGULAR meeting, Wednesday, November 1, 1899, DR. J. W. ELLIOT in the chair.

DR. J. C. WARREN demonstrated on the cadaver

ALLIS'S METHOD OF REDUCING A DISLOCATION OF THE HIP.

He explained also Allis's theory of the production of dislocations of the hip-joint. According to this author, the head of the femur is forced out of the acetabulum on to the dorsum by flexion, adduction, and rotation inwards and not by thrust, as was assumed by Bigelow. Forcible extreme abduction produces dislocation forwards.

Allis's rule for reducing dislocations on to dorsum, or, as he calls them, "outward dislocations," is: "Flex; turn leg out; lift; turn leg in; extend." Dr. Warren stated that he had tried this method on one occasion with satisfactory results. The rule for reduction of the thyroid dislocation, or dislocation forwards, is to flex and abduct the femur in order to bring the head into the position it occupied when it first left the socket. Traction outwards in the long axis of the femur brings the head over the socket, when it is pushed in by the thumbs of an assistant.

Dr. Warren also showed

A DISSECTION OF THE SHOULDER, EXPLAINING THE ACTION OF KOCHER'S METHOD.

On turning up the deltoid and separating the pectoralis major from its humeral attachment the head of the bone is seen lying under the coracobrachialis and biceps tendons. The supraspinatus and infraspinatus and teres minor are stretched across the glenoid cavity. As the humerus is strongly everted the head begins to roll out from the coracoid tendons and the spinatus group of muscles is relaxed. As the elbow is carried towards the median line the head of the humerus became more prominent and pushes the folds of the capsule before it. When finally the arm is inverted, the head of the bone takes in the slack of the capsule and rolls beneath it into the socket.

DR. CHEEVER: My experience with the thigh has not been very great, but those cases that I have had I have reduced by the Bigelow method, and never had the experience of having the capsule or anything intervene which prevented perfect reduction, in the recent case. Not so, however, with the shoulder, because all the dislocations of the shoulder that I have reduced have been done before the introduction of Kocher's method by one of two ways, as follows: The patient was etherized, laid on the floor or bed, the arm was pulled downwards, and with aid of the foot in the axilla the bone was pried into place. The other method was to lay the patient on the floor and put the foot on the patient's shoulder, holding the scapula down, and draw the arm directly up, and the head was lifted up into the socket. By those methods it has several times happened to me to have afterwards what Dr. Warren has termed subluxation, that is to say, a perfect reduction at the moment, but not staying, and we used to ascribe it to a fracture of the glenoid cavity or to some laceration of the ligaments. I can conceive it was probably due to the rude method of reduction which failed to unfold and eliminate all the fibres of the capsule which lay between the head of the bone and the socket. I do remember reduction by pulleys when ether was first coming in. I saw one of those cases done at the Massachusetts General Hospital in which the femur was drawn into place without ether, and I remember very well how anxious the surgeons and attendants were that the force should be applied very gradually, and that no sudden jar should take place in the performance for fear of breaking the neck of the bone, which occasionally did occur in spite of the best efforts. Subsequently I assisted Dr. Bigelow in some of his dissections, and remember very well what a great step in advance it was when he explained the anatomy of the hip dislocations; and all such dislocations that I have had to reduce I have been able to reduce by his method except one sent to us at the City Hospital a good many years ago, where a strong young sailor had been taken care of by natural bone setters, and the dislocation of the femur, if it had ever been recognized, had never been reduced. He was brought to the hospital after some weeks, and repeated efforts made at reduction with ether with manipulation, and by the aid of a triangle rigged with pulleys, etc., but they all failed.

I have nothing more to add except one case that perhaps may be a little in controversion of what Dr. Allis says of the femur not being put out of place by a thrust. It has been my rather rare fortune to have one case of compound dislocation of the femur with the bone unbroken. Those cases are very rare, and I think something less than fifteen or twenty are on record as having been observed. In this case the femur was driven out of the socket up on to the pubes and emerged between the muscles and skin in front of the thigh, and the head of the femur looked directly upwards and was unbroken — a compound dislocation of the femur. It took place in this way. The man was one of those persons employed in unloading heavy boxes of goods in the wholesale district. He was trying to pull a loaded box off the wagon by the aid of cotton hooks and braced himself back, and the box came down and struck against his knee, while the steps of the store were against the back of the pelvis, and the bone was driven directly out, without the possibility of rotation. Of course that would be an extremely rare accident, but illustrates the fact that if the force is applied in the right way the femur can not only be driven out of the socket, but through the soft parts.

I had a woman brought in once who had the femur dislocated by a falling sign, and it struck directly on the back of the trochanter in the way that used to be thought the usual way of producing dislocation, and the bone was knocked out of place and down into the thyroid foramen. That was reduced. In that case she may have bent her body and had the motion of

rotation and abduction which assisted in throwing it out; but in the compound dislocation it seems as if it must have been the impinging of direct force; and confirmation of that is that, the patient dying at the end of two or three days, further injuries were found, inasmuch as there were partial fracture of the lumbar vertebræ and laceration of the aorta just where it goes over the edge of the pelvis and is ready to bifurcate into the iliacs.

I have read Dr. Allis's book, which he was kind enough to send me, and it is extremely ingenious. I have been confused by the multitude of its diagrams. I have found it impossible, not having practical cases to use it on frequently, to carry his method firmly in my mind. I think that this demonstration would enable me to do it better. I think the part assigned to the sciatic nerve is very interesting, but of course I should like to see it verified by an absolute case, and I do not understand that Dr. Allis has had an absolute case that proves that it has occurred.

Dr. Lund: I would like to say with reference to Allis's theories of production of these dislocations by twist rather than by thrust, that in the experiments he made on the cadaver he was unable to produce the dislocation by direct thrust except where the injury was so severe as to fracture the pelvis or break the ligaments. I do not think he would deny that dislocation could be produced in such a case as Dr. Cheever has described, in which I believe there was concomitant fracture of the pelvis.

Dr. Cheever: No.

Dr. Lund: Allis found that the only way he could produce a dorsal dislocation on the cadaver was by firm twisting, flexion of the leg and twisting it inward, carrying the knee inward and the foot outward, the opposite of the maneuvre which he proposes for reduction; this carries the head of the femur firmly against the posterior part of the capsule and bursts it. I have done this in one instance on the cadaver.

In regard to the inward dislocation, Allis has shown that that inward dislocation can be produced by direct leverage; that is, if the leg is taken and carried out from the body until the heel almost touches the ear, the great trochanter comes against the brim of the pelvis, and using the acetabulum as a bony lever the head of the bone is pried out. This Dr. Warren and myself have also verified on the cadaver.

Dr. Harrington: We do not get dislocations of the hip very often. I have had two, both in muscular subjects, both forward dislocations, very easily reduced by the Bigelow method. Does Dr. Allis claim that his method will be more uniformly successful than the Bigelow method? I would like to ask Dr. Warren how he would determine in what portion of the capsule the tear was when it was torn off as a cap.

Dr. Warren: I should think that would depend on the difficulties you had in reduction; if you pried the head of the bone from the dorsum towards the acetabulum and it would not stay, then you would have to work on that theory. I do not advocate this method of Allis as superior to Dr. Bigelow's. At the same time it was a very interesting study of the subject, and Allis has shown great ingenuity and mechanical knowledge in working out this problem, and I thought possibly if the surgeons were familiar with that they might have an opportunity to try it on a case, and then they could judge whether it was better or not. I should think it was well worth a trial.

Dr. F. B. Lund read a paper on

A CASE OF PERFORATING GASTRIC ULCER; OPERATION; RECOVERY.[1]

Dr. H. F. Hewes: I remember one case of gastric ulcer operated upon for perforation which illustrated a point in the diagnosis of the position of the ulcer of considerable interest, and I should think importance, to surgeons in considering the question of operation for removal of the ulcer. When, by a change of the position of the body, the ulcer is brought above the level of the gastric contents, the pain, which is a prominent symptom, vanishes. A patient, for instance, who has pain when lying down and not when standing up probably has an ulcer on the lesser curvature or in the region of the cardia. One in whom pain disappears on the right side and comes back on the left probably has ulcer in the region of the cardia, etc. This case had a very constant history of relief of pain when she stood up, and when she lay on the right side; at other times the pain was pretty constant. The ulcer was in an unusual position, but one borne out by the symptoms; it was in the fundus of the stomach, posterior wall, very close to the cardia, a most unusual place for an ulcer, but it bore out this point in the diagnosis very perfectly. I have not been able to test this point in diagnosis in other cases in which I have made notes, because the cases have not come to operation or autopsy.

Dr. Munro: I think the incision low down is important. I recall one case which came to operation on the third day, in which the ulcer could not be closed nor even stitched to the abdominal wall. It was walled off with gauze and tubes, etc. The patient lived three or four days comfortably, and then suddenly developed sepsis and died in twenty-four hours. Autopsy showed that the pelvis had not been thoroughly washed out at time of operation. Secondary sepsis developed from that focus, everything else in the abdomen and about the ulcer being sweet and clean. I feel sure if I had made Dr. Lund's second incision and thoroughly washed out the pelvis, she would have gotten well.

Dr. Elliot: I have had the good fortune to have the closed ulcer heal in all my cases. The patients have died from something else usually, confirming Dr. Lund's point that if you simply had the problem of sewing up the hole in the stomach or intestine, and nothing else to deal with, it probably would be a pretty successful thing, but infection and various other causes have come in to make my cases fatal.

My first case was a case of recurring hemorrhage of the stomach lasting for weeks and months, and finally I operated in profound anemia; that patient died from anemia, without any leak of stomach contents, although part of the stomach was resected.

In another case of perforation of the duodenum the incision was made from the ensiform cartilage to the symphysis pubis and the ulcer was stitched with a great deal of difficulty behind the duodenum. In that case we sewed up the abdominal wound very rapidly, as the patient was in a collapse, and the patient died of hemorrhage from one of the vessels in this long incision, the house officer not recognizing the trouble in time to secure the vessel. The ulcer was found to be perfectly closed.

Another case of ulcer of the duodenum was rather

[1] See page 25 of the Journal.

interesting from its symptoms. It occurred in a neurasthenic man whom no one would believe when he claimed to have pain. On the fifth day I was called to see him and operated. In this case the interesting symptom was present of entire absence of liver dulness, the gas having pumped itself out of the duodenum. The ulcer had formed a valve-like joint, so that the gas had leaked through, but no feces, as far as I could see. The ulcer was stitched, but the man died on the third or fourth day. At the autopsy it was found that although the ulcer had united well, there was a fine line of infection leading down beside the spine into the pelvis; the infection had undoubtedly taken place before the operation and drainage of the pelvis might have saved the patient. I usually drain the pelvis in such cases, but this case seemed to be without infection.

I am rather inclined to think that Dr. Lund's statistics and all the statistics on this subject are too favorable, since men report favorable cases more often than unfavorable. Still I think it is very encouraging to note the improvement shown year by year, and his case is certainly a very brilliant one.

DR. LUND: In regard to the diagnosis in these cases. In this case I stated that we made a diagnosis of probable perforation, but it was only a probable diagnosis. I was certain of general peritonitis, and was in doubt whether to incise over the appendix or epigastrium and was guided to the epigastrium by the greater tenderness there. Whether the perforation is to the right or to the left, Tinker has found in examining 213 cases that the tenderness is in the epigastrium and left hypochondrium. That was the case in this man although the perforation was to the right.

As to perforations on the posterior wall, these take place into the lesser peritoneal cavity necessarily, and it is therefore necessary to wash out the lesser peritoneal cavity. Several cases have been reported where that has been successfully done. In this case I could see through the lesser omentum that everything was clean, and there was no reason why anything should have got in there.

In regard to the cases where the patient has afterwards died of hemorrhage or perforation of another ulcer, it is important, where you have time, to look over the stomach and see whether there are other ulcers present, because not a few cases of this sort have been reported. In a good many cases it is inadvisable to do any more than to attend to the one you know to be the cause of perforation.

I think it is important to treat a man after you operate on him as you treat for gastric ulcer, and keep him on liquid diet a long time. It is somewhat remarkable that this man has had no dyspeptic symptoms since he left, and the completeness of the cure in his case may be partially due to his careful diet during his long stay in the hospital.

PATHOLOGICAL SPECIMEN.

DR. WARREN showed an ovarian tumor removed from a girl of sixteen. The tumor had been growing about six months. She had had no catamenia. At first it was thought to be a case of imperforate hymen, but examination under ether showed that that was not the case, but there was no cervix at all, no os apparently except a little dimple high above the pubes on the left-hand side. After the tumor was removed there was found to be an undeveloped uterus.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, JANUARY 11, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.

THE CASE METHOD OF TEACHING MEDICINE.

WE commend to the attention of those of our readers who are interested in medical education the communication by W. B. Cannon, printed in another part of this issue. It presents, to our mind, a perfectly feasible method of adding to the efficiency of clinical teaching, to the benefit not only of the student but also of the instructor. Mr. Cannon's paper is clearly the result of a very careful consideration of the merits and deficiencies of existing methods from the standpoint of a man who has himself had considerable experience in teaching as well as in being taught. We find little in the paper from which to dissent, and much which appeals to us as a distinct advance. Unlike many proposed reforms, it is not iconoclastic, but rather supplementary to what we already have, and what experience has shown to be on the whole serviceable. Recitations and even the much-abused didactic lecture are given a place, and the existing clinical lecture retains its position in the curriculum undisturbed. What Mr. Cannon would add to all this is a nearer personal contact with cases than is at present possible to the medical student under ordinary conditions. Since patients are unavailable for large classes in sufficient number, he thinks the same end may be at least partially attained by the study of cases as they have actually occurred and as they are transcribed in hospital or private record books. Let all the students of a class study the histories of actual cases and report upon them at stated conferences, using for purposes of study the various text-books at their command, and they will, in his opinion, come nearer to the practical problems of medicine than by the use of text-books without cases, or by the recitation method alone. The theory is, that a man who is capable of studying medicine at all is capable of facing the intricacies of clinical diagnosis at first hand, and not primarily through the medium of his instructor. He must be taught to be independent at the outset of his practical work, and this, it is urged, may be attained, in a measure at least, by the personal study of actual cases.

Cannon finds a strong argument for his idea in the success of a precisely similar system, now being used in connection with the study of law. This "case method" as it has been named, has led to the high position which the Harvard Law School holds in the teaching of law, and we quite agree with Cannon that there seems no reason why it should not apply with equal force to the study of clinical medicine. We at least feel sure that a careful reading of his paper will convince the most conservative of the reasonableness of his contention, which, as we understand it, is essentially that a student of medicine, like a student of any other branch of knowledge, needs above all things to be trained how to use his own mind, rather than to be overburdened merely with the results of others' learning. The case method as discussed in this paper seems to us to offer a possible solution of this problem, which with the growth of special knowledge is certainly assuming each year greater and greater significance.

SIR JAMES PAGET.

THE death of Sir James Paget recalls a period of English surgery when it occupied a position as high, if not higher, than that of surgery in any other country. Sir James's career began early in the century and he was already in his prime when Virchow was still a young man and enunciating his new ideas of cellular pathology, and Lister was practising surgery in Glasgow and still unknown to fame.

Paget's reputation both as a surgeon and a scientific man was based upon his lectures on "Surgical Pathology." This book, the first edition of which appeared in 1853, opened to the Anglo Saxon student a treasure house of surgical knowledge which gave inspiration to many a young surgeon to look beyond the mere mechanical side of his profession, and not to be satisfied with the crude description of disease which passed current in the text-books of the day. The technique of the microscopy of that time was still very crude and the knowledge which it yielded was known to but few. What Hyrtl afterwards called the kid glove work of the laboratory was then unknown, and to the student of to-day, accustomed as he is to instruments of precision like the modern microtome, to the intricacies of aniline stains and other refinements of the modern laboratory, Paget's workshop would have seemed a poor and humble source to have produced such far-reaching influences. Those, however, whose privilege it has been to know the man would not be surprised at the results he was able to obtain. An acute observer and a painstaking student, he possessed in an unusual degree the ability to express his thoughts in easy and elegant language, and it was at his lectures at St. Bartholomew's Hospital that the results of his investigations in pathology first took shape. He was as ready with his pen as with his tongue, and his colleagues to this day bear testimony to the facility with which, while surrounded by his family, he could quietly write out chapters which have since given him fame.

Those who have been brought up under the influence of the modern German school should not forget the scientific work of the English-speaking teachers of that time. They should realize that some of the impetus which is now being felt on the scientific side of medicine came from England, and that the work of Paget was presently followed by that of Lister.

Paget has also left his mark as clinician in his clinical lectures and essays. Although they were written before the antiseptic era had been firmly established they are replete with valuable information. Many of his expressions, such as the "nervous mimicry of disease," the "stammering of the bladder," "quiet necrosis," and other well-known phrases, are destined to hold their place in literature. His lecture on the "Calamities of Surgery" is one which every beginner should not fail to read. The name of Paget has not been as familiar to the student of the last decade of the century as it was before. The distinguished author had outlived most of his generation, and of late years had so far yielded to the pressure of the hand of time as to be unable to contribute to current literature or to continue to occupy a conspicuous position among his professional brethren. The International Medical Congress in London held in 1881 was probably one of his last public appearances before the medical world. For many years he had lived in the retirement which his brilliant work as a surgeon and a teacher had entitled him to enjoy.

MEDICAL NOTES.

THE PLAGUE SITUATION. — Bubonic plague is reported from the city and neighborhood of Sao Paulo, Brazil. In Honolulu, after a respite of thirteen days, several new cases have appeared, with three deaths. There is a tendency to evade the law with regard to death certificates and the authorities are thereby given considerable annoyance. One difficulty has been that the bodies of plague victims have in every case been cremated, which, through superstition, has led natives and Chinese to conceal their sick. Colonel Greenleaf cables from Manila that bubonic plague has appeared in and about Manila, in the Philippines. It is said that the disease carries off its victims within forty-eight hours from its attack, and in the country towns medical aid or supplies are not to be had readily, and then only in a limited way. Not only this, but burial of the corpses of those who have died from this disease is carelessly conducted, and absolutely no precautions are taken. The United States Government has taken prompt measures to prevent the possibility of the introduction of the disease into America. The quarantine of the Philippines will be in charge of the Marine-Hospital Service and special officers to manage the work will be detailed. Passed Assistant

Surgeon J. C. Perry, of the Marine-Hospital Service, has been appointed to have charge temporarily of the quarantine service at Manila. He has been at Hong Kong for six months, is familiar with other Asiatic ports and is regarded as an experienced and capable officer.

YELLOW FEVER IN CUBA. — The yellow-fever statistics for 1899 from Havana show that yellow fever is still to be reckoned with in Cuba. The report for December shows: New cases 70, deaths 22, recovered 30, under treatment 25. Of the patients, 23 were Americans and 50 Spaniards. Six of the former died and 10 of the latter. Experts hold that the difference in the ratio of deaths was due to the use of alcohol. Comparison of the whole year with the ten preceding years is favorable, but the last three months of 1899 were unfavorable. The December record of deaths from 1890 to 1899 is 11, 17, 32, 10, 24, 19, 225, 17, 13, 22. The yearly totals for the same period are 327, 363, 362, 512, 418, 560, 1,540, 1,056, 162, 103. It is of interest that the records show that, in spite of favorable weather since September 1st, the situation has been worse than during the corresponding period of the Spanish occupation. The explanation offered is the great influx of Spanish immigrants who were not acclimated and who were huddled in the lower quarters of the city. They were badly nourished and were unable to resist the disease. One prominent fact is the failure of house disinfection to kill the germs of the disease. Every house in the city has been disinfected several times. Those familiar with the conditions are not surprised at these facts. The introduction of proper methods of sanitation will no doubt gradually overcome the disease.

COMPETITION FOR THE AMERICAN MEDICAL ASSOCIATION MEDAL. — At the meeting of the American Medical Association held June 4, 1897, it was resolved to restore the former policy of the Association in favor of offering annually a gold medal for meritorious scientific work. The committee for this year consists of Drs. George M. Gould, of Philadelphia; E. Fletcher Ingals, of Chicago, and T. W. Huntington, of Sacramento, Cal. The competing essays shall be typewritten or printed and shall bear no mark revealing their authorship; but instead of the name of the author, there shall appear on each essay a motto, and accompanying each essay shall be a sealed envelope containing the name of the author and bearing on its outer surface the motto of identification. The committee shall have authority to reject and return all essays in case none have been found worthy of the Association medal. Competing essays must be in the hands of the committee not later than March 1, 1900. For further information address any member thereof.

DR. SCHENCK AND THE UNIVERSITY OF VIENNA. — It is reported that Dr. Schenck, who has of late come into particular prominence because of his theories regarding the determination of sex, has been removed from his position at the University, because of his radical views. He has had charge of the Institute for Embryology for the past twenty-six years.

WILLIAM A. HAMMOND, M.D. — Dr. William A. Hammond, former Surgeon-General of the U. S. Army, died in Washington, January 5th. He had conducted a sanitarium in Washington for some years immediately preceding his death.

PROFESSOR RÖNTGEN ACCEPTS CALL TO MUNICH. — Professor Röntgen, after considerable hesitation, has accepted a call to the University of Munich.

HOSPITALS FOR TUBERCULOSIS IN SPAIN. —It is said that two hospitals for the treatment of tuberculosis are about to be established in Spain.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, January 10, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 79, scarlatina 37, measles 73, typhoid fever 6.

SYSTEMATIC STUDY OF CANCER. — The fund of $100,000, less $8,000 legacy duty, left by Mrs. Caroline Brewer Croft has been turned over in part to Harvard University to be used for the purpose announced in the will. The money will be under the immediate jurisdiction of the Department of Surgery of the Harvard Medical School, which already has a small fund for purposes of research. Steps have been taken to begin the study for which the money was left. The principal appointee thus far is Dr. E. H. Nichols, who will sail for Europe early in February, to be gone two months, for the purpose of investigating the work heretofore done and at present being carried out in English and Continental laboratories. On his return the work will be vigorously prosecuted in those directions which promise hope of results.

AN EXORBITANT VERDICT SET ASIDE. — A verdict of $30,000 for a plaintiff in an accident suit against a railroad rendered some time ago has recently been set aside by Judge Bishop, of the Superior Court, and a new trial ordered unless a compromise can be reached. Excessive verdicts seem, on the whole, to be increasing in number; it is altogether to be commended that the judges at times take occasion to assert their authority in over-ruling unjust jury verdicts in these cases.

INCREASE IN CREMATIONS. — The sixth annual meeting of the Massachusetts Cremation Society has recently been held. The report showed that the increase in the number of cremations from year to year has been very pronounced. There were 230 in 1899 as compared with 167 the year before. The total number of cremations since the crematory was opened is 869. Officers were elected as follows: Clerk, John Homans, 2d; Treasurer, John Ritchie; Directors, James R. Chadwick, John O. Marble, Augustus Hemenway, Babson S. Ladd, Robert H. Richards, John

Ritchie, John Homans, 2d, John A. Higginson and Richard W. Hale.

No Plague in Boston Harbor. — The steamer *Fitz Clarence*, from Antwerp, was last week detained by the quarantine authorities for several days because of a suspicious case, which it was thought might be plague. Further investigation has shown that this is not the fact and the vessel with her cargo has been discharged from quarantine. The patient, who was a stowaway, will be returned to Antwerp, as the law demands.

Two Centenarians. — Mrs. Cynthia Conant, reported to be one hundred and one years old, died last week in Springfield, Mass. Lucy Boston, of Webster, Mass., said to have been one hundred and five years old, and the last survivor of the Nikmaunk tribe of Indians, was burned to death in her house, January 6th, the fire probably being the work of incendiaries.

The Will of R. B. Brigham. — The late Robert Brock Brigham, after bequeathing small sums to various charities, leaves the greater part of his estate to found a hospital in Boston for chronic disease, to be known as the Robert B. Brigham Hospital for Incurables. The estate is a large one.

Bequests to Hospitals. — The late Daniel Sharp Ford has left by will the following bequests to hospitals: Boston City Hospital, $6,000; Massachusetts General Hospital, $7,000; Children's Hospital, Boston, $5,000.

Lectures on the Evolution of Sex. — Prof. Patrick Geddes, of Edinburgh, is giving a course of lectures on the evolution of sex under the auspices of the Twentieth Century Club.

A Hospital for Jamaica Plain. — Mrs. Abby L. A. Faulker has bequeathed her entire estate to be used ultimately for the establishment of a hospital in Jamaica Plain.

NEW YORK.

Tenement Houses: State Commission in Lunacy. — In his second annual message to the Legislature, Governor Roosevelt urges that special attention be given to the need of reform in the laws governing tenement houses. The Tenement-House Commission of 1894, he says, declared that, in its opinion, the tenement-house laws needed to be revised every five years, and he believes that the improvements in building materials and construction of tenements and the advance in sanitary legislation all demand further modification of existing laws. To this end he suggests the appointment of a commission to present a revised code of tenement-house laws. He expresses his hearty sympathy with the objects sought in the drug clerks' bill presented last year, which owing to certain defects he was unable to sign, and trusts that a satisfactory bill may be found during the present session. In speaking of the work of the State Commission in Lunacy, he states that progressive improvement shows that the State care system was wisely founded and must remain the permanent policy of the State. Not only has the care of the insane been bettered, but the cost has been lessened. The accommodations have been increased and improved, and the annual increment of permanent cases, the ultimate cost of the State of each of which is computed at $5,000, has been diminished. While the reduction of cost of maintenance the past year from the per capita of $185.20 in 1898 to $178.42, in the face of a general advance in prices, and contrasted with $216 before the State Care Act, is satisfactory, it is of far more importance that the annual increase of patients in hospitals is steadily decreasing. In 1897 it was 733, in 1898, 634, and in 1899, 529. These figures allow but one conclusion — better care of the insane; and that conclusion is supported by the fact that 1,009 patients have been discharged fully recovered, while 921 others have been sufficiently improved to allow their return to their homes.

Academy of Medicine Free from Debt. — At a meeting of the New York Academy of Medicine held January 4th, Dr. Reginald H. Sayre, the Treasurer of the Board of Trustees, reported that the remaining indebtedness of the Academy, amounting to $2,000, for the erection of its present commodious building, had been paid, and that it would start in on the new year entirely free from debt. The building cost about $240,000, but with the increased valuation of the land since its purchase the property is worth very much more than that at the present time.

Death from Carbolic Acid. — A fatal accident of unusual character occurred at the City Hospital on Blackwell's Island on January 5th. A patient who was in a very unclean condition was being given a bath, and the male nurse who had charge of him poured over his head and body about eight ounces of a strong solution of carbolic acid, which he supposed to be tincture of larkspur. The poor man suffered intense agony and in spite of prompt treatment died within an hour from the result of the burns caused by the acid.

The Babies' Hospital. — The eleventh annual meeting of the managers of the Babies' Hospital, connected with the Post-Graduate Medical School, was held on January 4th. The institution has for some time been located in the fine building on Lexington Avenue, erected for a private hospital by Dr. T. Gaillard Thomas, and during the past year 394 patients were treated. Thirty-five beds are at present in use, and 24 nurses have been graduated from the training school connected with the hospital.

Officers of New York Neurological Society. — At the annual meeting of the New York Neurological Society held January 2, 1900, the following officers were elected for the coming year: President, Frederick Peterson, M.D.; 1st Vice-President, Joseph Collins, M. D.; 2d Vice-President, L. Stieglitz, M.D.; Recording Secretary, Pearce Bailey, M.D.; Corresponding Secretary, Lewis A. Conner, M.D.; Treasurer, Graeme

M. Hammond, M.D.; Councillors, C. L. Dana, M.D., M. A. Starr, M.D., B. Sachs, M.D., E. D. Fisher, M. D., J. Arthur Booth, M.D.

SOCIETY FOR THE RELIEF OF WIDOWS AND ORPHANS OF MEDICAL MEN. — This Society, instituted in 1842, has recently issued its fifty-eighth annual statement. During the time of its existence it has assisted a large number of widows and orphans. In the last year it has aided eighteen widows and six children of deceased members. The members of the Society now number one hundred and thirty-seven.

A NEW STORAGE RESERVOIR. — A proposition for the construction of a new storage reservoir in Westchester County, in connection with the Croton system, of the capacity of 9,000,000,000 gallons, which was made some time ago by Commissioner Dalton, of the Department of Water Supply, has now been adopted by the Board of Public Improvements.

BEQUESTS BY E. F. HOLDEN, M.D. — Erastus F. Holden, who died recently at Syracuse, N. Y., bequeathed $25,000 to Syracuse University and $5,000 to the Syracuse Women and Children's Hospital.

CENTENARIAN. — Mrs. Sarah Allen, who is a native of Ireland, celebrated her one hundredth birthday on January 1st, at Union Hill, near Hoboken.

ARMY NOTES.

UNITED STATES REPRESENTATIVES TO INTERNATIONAL MEDICAL CONGRESS. — The President has designated the following officials to represent the United States Government at the International Medical Congress, which meets in Paris on August 2d, next, and at the Congress of Hygiene and Demography, which assembles at the same place on August 10th: For the army, Surgeon-General Sternberg and Major LaGarde; for the navy, Surgeon-General Van Reypen; for the Marine-Hospital Service, Surgeon-General Wyman and Passed Assistant Surgeon Rosenau. Major LaGarde has been invited to read a paper on gunshot wounds, the discussion to be opened by the Surgeon-General of the Austro-Hungarian Army.

MEDICAL ASSISTANCE TO THE ISLAND OF GUAM. — Flattering reports have reached this country concerning the efficient services rendered on the Island of Guam by Surgeons Leech, Stone and Grunwell, U. S. Navy. On occupation by United States forces this island was found to be entirely without medical assistance, the Spanish physicians having all taken their departure. In addition to the performance of their duties on board the naval vessels at the Guam station the gentlemen above named have been indefatigable in their work of caring for the sick, establishing hospitals and endeavoring to disseminate a knowledge of elementary hygiene among the people at large; their work being greatly appreciated by the natives.

ASSOCIATION OF SPANISH WAR VETERANS. — Major Victor C. Vaughan, U. S. V., has been recently appointed Surgeon-General of the Association of Spanish War Veterans. Major Vaughan is well-known to the profession as professor of hygiene at the University of Michigan, to which position he returned some months ago. Major Vaughan was commissioned as surgeon of the 33d Michigan Volunteers and accompanied that regiment to Cuba, being present during the operations against Santiago. He was subsequently made a chief surgeon of division, and for many months was a member of the board appointed to investigate the typhoid epidemics in the army camp.

A BED FIELD HOSPITAL FOR SOUTH AFRICA. — It is understood that the organization and equipment of a three-hundred-bed field hospital, for service with the British forces in South Africa, is being projected by the same organization of American women in England by which the hospital ship *Maine* was fitted out. As it is contemplated that this hospital shall be complete in its organization, personnel and equipment, even to possessing its own transportation and commissariat, it is evident that the problem presented is much more difficult of solution than the organization of a hospital ship.

SMALL-POX CAMP, ANGEL ISLAND. — The small-pox camp established on Angel Island, in San Francisco Bay, which has been maintained during the past two months on account of an outbreak of this disease in a negro volunteer regiment, has been recently broken up, twenty-three patients being returned to duty.

SAILING OF THE "MISSOURI." — The hospital ship *Missouri* has recently sailed from Manila for San Francisco with 286 sick and wounded on board.

Miscellany.

LUTHER D. WOODBRIDGE, M.D.

AT a meeting of the Berkshire District Section of the Massachusetts Medical Society, held in Pittsfield, December 28, 1898, it was unanimously ordered that the following notice as a memorial of Dr. Luther Dana Woodbridge be placed upon the records of the Society; that a copy be sent to the family, and that copies be furnished to the *Boston Medical and Surgical Journal* and to the North Adams and Pittsfield papers, for publication:

Dr. Luther D. Woodbridge, of Williamstown, died suddenly from heart disease on November 3, 1899. In his death the Berkshire District Medical Society has suffered a severe loss, for he was one of the most esteemed and gifted of our members.

Dr. Woodbridge was born at Perth Amboy, N. J., December 27, 1850; was graduated at Williams College in 1872, and the College of Physicians and Surgeons, New York, in 1877. Before entering upon his medical studies he was a tutor at Roberts College, Constantinople, and afterwards instructor in gymnastics at Williams College. After receiving his medical degree, he served as interne at Roosevelt Hospital and as Clinical Assistant at Chambers Street Hospital, New York, after which he spent a year in the hospitals of Vienna and London. In 1881 he began

practice in New York and received an appointment as assistant surgeon to the Manhattan Eye and Ear Hospital. In 1884 he was chosen professor of anatomy, physiology and hygiene at Williams College, which position he has ever since filled with marked ability and success, at the same time practising medicine in Williamstown. He became a member of the Massachusetts Medical Society in 1888, was president of the Berkshire District Medical Society in 1893, and of the North Berkshire Medical Society in 1889; he was a member of the American Medical Association and of the American Academy of Medicine, and in 1894 was appointed lecturer on diseases of the nervous system in the College of Physicians and Surgeons, Boston.

He was a regular attendant at the meetings of the Berkshire District Medical Society, and added greatly to their interest by his instructive addresses and his thorough and scientific methods of study. Always courteous and dignified in manner, he had yet great independence of thought and utterance, and his fellow members could not fail to be impressed with his ability, his sincerity and his elevated standards, both intellectual and moral. As a medical practitioner he was deservedly successful, and he was greatly beloved and respected, as he is now deeply mourned, by the whole of the highly cultured community in which he lived. Having begun life with missionary work, he never abandoned that vocation, but always labored zealously and effectively for the spiritual as well as the physical welfare of his fellowmen.

The Fellows of this Society tender to his bereaved family their sincere sympathy in their great affliction.

W. W. SCOFIELD, *President*; L. C. SWIFT, *Secretary*, of the Berkshire District Medical Society.

WAR NOTES FROM SOUTH AFRICA.

A CORRESPONDENT of the *British Medical Journal* speaks of the Mauser and Lee-Metford bullets, in use in the South African War, as follows:

"A wounded Boer referred to the Lee-Metford as a 'gentlemanly bullet,' and this remark is equally applicable to the Mauser. The wounds made by them are small, clean, and little disposed to suppurate, and the tendency to suppuration is no doubt decreased by the excellent physical condition of the patients and the healthiness of the district. Shock as a sign has been conspicuous by its absence even in the most serious cases, and gives little or no aid in the diagnosis of visceral injury. Retained bullets are comparatively uncommon, no doubt on account of the fact that most of the men have been wounded in rapid advances. The bullets met with have been little deformed, unless they have struck stones before entering, and I have seen no single instance which would suggest the use of either flattened or so-called explosive bullets among the wounded here. The only large exit wounds have been one or two opposite comminuted fractures."

It is worthy of remark, as in our own recent war, that the number of operations is relatively few. Speaking of this, the correspondent, G. H. Makins, F. R. C. S., says:

"Operations at the field hospitals have been very few in number; I think, at the most, six amputations have gone down to Wynberg, and there can be little doubt that such operations will be comparatively infrequent in this series of cases. The cases, as a whole, started remarkably well. There has been no serious wound infection up to the present — a great tribute to the care with which the dressings have been applied in the hospitals and on the field by the hard-worked officers of the R. A. M. C. In this camp, during the last week, on several occasions the officers were up all night, or went to bed at 12, to rise at 4 A. M. The heat during the day has been very great, 108° to 115° F. in the bell tents in the afternoons of the last few days."

Correspondence.

THE BEST DIET FOR THE TROPICS — THE ARMY RATION.

SAN JUAN, PUERTO RICO, December 27, 1899.

MR. EDITOR: — As a supplement to the article of my scientific friend, Colonel Smart, on the "Army Ration," let me add a few practical observations gathered in Puerto Rico.

Duty has taken me at one time or another since the first days of the American invasion into almost every town from Ysabela on the northwest coast to Humacao on the east coast, and then up the military road to this capital. In the district of Guayama and Southern Humacao it was part of my business to investigate the cause of deaths among the natives.

Everywhere I found the main causes assigned to be anemia and phthisis. Everywhere I went I was struck by this ever-prevalent anemia. The pale, yellowish, waxy skin, bloodless lips and swollen, puffy features formed a picture never seen by me out of tropical Puerto Rico. Yet I soon found that these people had been living on rice, beans, maize, dried codfish and fruits. Meat very rarely entered into their diet. They and their fathers before them had lived exclusively on the diet urged by the public press as suitable for tropical climates, and the result filled the hospitals with such ghastly cases of anemia that no one who has once seen the picture can ever forget the impression. On the other hand, I soon discovered that the people who lived in the towns and could afford it ate two hearty meals daily. These people, I believe, used more meat than we used in American cities, and there is no doubt in my mind but that I have used more meat and felt more need for it since I have been here than I ever used in the same time in the United States. Yet I am one of the few that have not had to go home for ill health; while the natives that eat in the hotels with me, and as freely as I do, are perfectly healthy individuals who showed not the least trace of anemia.

Only a few days since a native informed me with much gusto that one of the best things that Puerto Rico afforded was *chuleta de cerdo* — pork chops — surely one of the most unsuitable articles of diet for a tropic climate, as our physiological friends will tell us, and yet the absence of which, in my opinion, made that native anemia to a noticeable degree.

These observations are so common in this climate, and have been so forcibly impressed on me, that I feel more and more the wisdom of going very, very slowly in urging alterations in the ration.

Very respectfully,
P. R. EGAN, M.D.,
Assistant Surgeon, U. S. Army.

"TAKE NO THOUGHT."

BALTIMORE, MD, January 6, 1900.

MR. EDITOR: — The following extract from Morley's "Oliver Cromwell," *Century* for December, page 277, seems applicable to your criticism of Dr. Osler's McGill University Address: "In other words, Cromwell fixed his eyes upon the need of the hour, used all his energy and devotion in meeting it and let that suffice. In men of action there are few better marks of a superior mind."

Very truly yours,
EUGENE F. CORDELL, M.D.

METEOROLOGICAL RECORD

For the week ending December 30th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		We'th'r. *		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S...24	29 52	40	46	34	71	88	81	S.E.	S.E.	7	12	O.	R.	.24
M...25	29 49	38	45	30	70	56	63	S.W.	S.W.	10	14	C.	O.	.02
T...26	29.79	25	32	18	64	61	62	W.	W	14	10	F.	C.	
W...27	30.13	25	32	18	57	65	61	W.	S.W.	12	12	C.	C.	
T...28	30.10	25	30	20	66	68	67	W.	N.	8	10	O.	C.	
F...29	29.79	22	28	15	67	65	66	N.	W.	13	14	C.	C.	
S...30	29 64	15	22	8	64	58	61	N.W.	W.	9	15	C.	C.	
☞														.26

* O, cloudy; C, clear; F, fair; G, fogs H, hazy; S, smoky; R, rain; T., threatening; N., snow. † Indicates trace of rainfall. ☞ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DECEMBER 30, 1899.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Typhoid fever.	Diphtheria and croup.	Scarlet fever.
New York	3,550,053	1248	414	11.04	22.93	1.04	4.24	1.76
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	—	—	—	—	—	—	—
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	232	75	10.50	21.42	1.26	4.62	2.52
Baltimore	506,380	173	48	10 83	14.25	2.28	6.27	—
Cincinnati	405,000	111	—	6 30	9.00	—	1.80	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	—	—	—	—	—	—	—
Washington	277,000	110	28	17. 9	13.65	8.19	3.64	—
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	81	38	14.76	—	—	1.23	—
Nashville	87,754	32	10	—	20.00	—	—	—
Charleston	65,165	29	11	—	3.45	—	—	—
Worcester	111,732	28	10	21.42	—	—	10.71	—
Fall River	103,142	34	16	11.76	14.70	—	5.88	—
Cambridge	92,836	42	10	21.42	—	—	14.28	4.76
Lowell	90,114	39	9	—	22.04	—	—	—
New Bedford	70,511	18	8	11.11	16.66	5.55	5.55	—
Lynn	68 218	17	8	—	17.64	—	—	—
Somerville	64,394	16	2	25 00	25.00	6.25	—	18.75
Lawrence	58,072	17	8	11.76	17.64	—	—	5.88
Springfield	58,266	18	8	16 66	5.55	5.55	5.55	—
Holyoke	44,510	12	5	33.33	16.66	—	16 66	—
Brockton	38,759	—	—	—	—	—	—	—
Salem	37,723	12	6	8.33	16.66	—	8.33	—
Malden	36,421	8	1	12.50	—	—	12.50	—
Chelsea	34,253	13	4	23.07	23.07	—	23.07	—
Haverhill	32,651	11	1	18.18	—	—	18 18	—
Gloucester	31,426	8	1	12.50	—	—	—	—
Fitchburg	30,523	5	2	20.00	—	—	20.00	—
Newton	30,461	9	2	22.22	—	—	11.11	—
Taunton	28,527	13	3	—	23.07	—	—	—
Everett	28,102	8	4	—	—	—	—	—
Quincy	24,578	—	—	—	—	—	—	—
Pittsfield	23,421	3	2	—	—	—	—	—
Waltham	22,791	9	1	11.11	22.22	—	11.11	—
North Adams	21,583	6	1	—	—	—	—	—
Chicopee	18,316	5	—	—	40.00	—	—	—
Medford	17,190	3	—	—	—	—	—	—
Newburyport	15,936	6	4	—	—	—	—	—
Melrose	14,721	6	—	—	—	—	—	—

Deaths reported 2,496; under five years of age 744; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas and fevers) 261, acute lung diseases 459, consumption 352, diphtheria and croup 106, typhoid fever 32, measles 31, scarlet fever 29, diarrheal diseases 22, whooping-cough 18, cerebrospinal meningitis 12, erysipelas 11.

From measles New York 20, Providence 7, Washington 2, Boston and Springfield 1 each. From diarrheal diseases New York 10, Cincinnati 3, Baltimore, Providence and Fall River 2 each, Nashville, Worcester and Holyoke 1 each. From whooping-cough New York 12, Baltimore 2, Boston and Cambridge 1 each. From cerebrospinal meningitis New York 5, Boston and Worcester 2 each, Lawrence Gloucester and Newton 1 each. From erysipelas New York 8, Cincinnati 2, Holyoke 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,404,408, for the week ending December 23d, the death-rate was 27.5. Deaths reported 6,061: acute diseases of the respiratory organs (London) 968, measles 168, diphtheria 122, whooping-cough 111, fever 80, diarrhœa 45, scarlet fever 44, small-pox (Hull) 8.

The death-rates ranged from 17.6 in Huddersfield to 42.4 in Portsmouth: Bradford 21.0, Cardiff 24.4, Gateshead 21.0, Hull 23.1, Leeds 18.9, Liverpool 33.9, London 29.9, Manchester 23.8, Newcastle-on-Tyne 24.9, Nottingham 25.3, Plymouth 38.9, Salford 26.8, Sheffield 24.0, Sunderland 29.4, West Ham 20.7.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING JANUARY 6, 1900

A. W. DUNBAR, passed assistant surgeon, ordered to duty on the "Monongahela" immediately.

R. K. SMITH, passed assistant surgeon, detached from the Naval Hospital, Mare Island, Cal., on reporting of relief and ordered to duty on the "Pensacola."

J. H. PAYNE, assistant surgeon, detached from the "Indiana" and ordered to duty at the Naval Hospital, Mare Island, Cal.

A. F. PRICE, medical director, promoted to medical director from April 9, 1899.

G. M. PICKRELL, surgeon, promoted to surgeon from September 19, 1899.

R. SPEAR, assistant surgeon, ordered to duty in connection with the Naval Recruiting Rendezvous, Philadelphia, Pa., January 9th.

I. N. HURD, pharmacist, ordered to duty at the Key West Naval Station, January 11th.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE FOURTEEN DAYS ENDING JANUARY 4, 1900

SAWTELLE, H. W., surgeon. Granted leave of absence for thirty days. December 28, 1899.

MCINTOSH, W. P., surgeon. Granted leave of absence for five days. December 27, 1899.

PERRY, J. C., passed assistant surgeon. To proceed to Amoy, China, for special temporary duty. December 27, 1899.

ROSENAU, M. J., passed assistant surgeon. To proceed to Baltimore, Md., for special temporary duty. December 23, 1899.

THOMAS A. R., passed assistant surgeon. To proceed to New York, N. Y., and report to Surgeon L. L. WILLIAMS (Immigration Depot) for special temporary duty. December 22, 1899. To proceed to Rotterdam, Netherlands, for duty. December 22 1899.

COFER, L. E., assistant surgeon. Granted leave of absence for one month. December 23, 1899.

TABB, S. R., assistant surgeon. Granted leave of absence for fifteen days. December 27, 1899.

DUFFY, FRANCIS, acting assistant surgeon. Granted leave of absence for seven days. December 28, 1899.

MCINTOSH, W. P., surgeon. To proceed to Columbia, Tenn., for special temporary duty. January 2, 1900.

PERRY, J. C., passed assistant surgeon. To proceed to Manila, Philippine Islands, for temporary duty. January 4, 1900.

FRICKS, L. D., assistant surgeon. Assigned to duty as assistant to the director of the Hygienic Laboratory, Washington, D. C. January 4, 1900.

MOORE, DUNLOP, assistant surgeon. Relieved from duty at San Francisco, Cal., and directed to proceed to Portland, Ore., and assume command of the Service. December 29, 1899.

CURRIE, D. H., assistant surgeon. Relieved from duty at Louisville, Ky., and directed to proceed to Washington, D. C., and report to the director of the Hygienic Laboratory for temporary duty. December 29, 1899.

SOCIETY NOTICE.

SUFFOLK DISTRICT MEDICAL SOCIETY. — The Section for Clinical Medicine, Pathology and Hygiene will hold its meeting at 19 Boylston Place, Wednesday, January 17, 1900, at 8 P. M.

At 8 o'clock: Dr. E. W. Taylor will report "An Unusual Complication of Epilepsy."

At 8.15 o'clock: Dr. H. F. Hewes will read a paper entitled "Some Observations upon Diseases of the Stomach." Discussion by Drs. E. G. Cutler and E. P. Joslin.

J. BERGEN OGDEN, M.D., *Secretary*,
Harvard Medical School, Boston.

RECENT DEATH.

CHARLES KINGSLEY, M.D., M.M.S.S., died in Marlboro, December 29, 1899, aged thirty years.

Original Articles.

A RHODE ISLAND PHILOSOPHER (ELISHA BARTLETT).[1]

BY WILLIAM OSLER, M.D.,
Professor of Medicine, Johns Hopkins University, Baltimore, Md.

Rhode Island can boast of one great philosopher, one to whose flights in the empyrean neither Roger Williams nor any of her sons could soar, but the immortal Berkeley was only a transient guest in this State, waiting quietly and happily for the realization of his Utopian schemes. Still he lived long enough in Rhode Island to make his name part of her history; long enough in America to make her the inspiration of his celebrated lines on the course of empire. Elisha Bartlett, teacher, philosopher, author, of whom I am about to speak, whom you may claim as the most distinguished physician of this State, has left no deep impress on your local history or institutions. Here he was born and educated and to this his home he returned to die, but his busy life was spent in other fields, where to-day his memory is cherished more warmly than in the land of his birth.

I.

Born at Smithfield in 1804, Bartlett was singularly fortunate in his parents, who were members of the Society of Friends, strong, earnest souls, well endowed with graces of the head and of the heart. The gentle life, the zeal for practical righteousness and the simplicity of the faith of the followers of Fox, put a hall-mark on the sensitive youth which the rough usage of the world never obliterated. No account of Bartlett's early life and school-days exists — an index that they were happy and peaceful. We may read in his poem called "An Allegory" certain autobiographical details, transferring the

> "Meadow and field, and forest, dale and hill;
> Orchards, green hedgerows, gardens, stately trees,"

from the old England which he describes to the banks of Narragansett Bay. Paraphrasing other parts of the poem we may say that auspicious stars shone over his cradle with the kindliest light and promise, and amid the genial air of a New England home, goodness, truth and beauty were his portion. He tells of the wonder and delight stirred in his young soul by the thousand tales of "fairies and genii, giants, dwarfs and that redoubtable and valiant Jack who slew the giants." Then as the days lengthened he came under the spell of "The Arabian Nights" and of "Robinson Crusoe." Looking back in after years he compared this hearty, wholesome life to some bounteous spring that wells up from the deep heart of the earth. Addison, Goldsmith and Washington Irving filled his soul with freshness like the dawn,

> "And led by love and kindness, ran the hours
> Their merry round till boyhood passed away."

In the ruder discipline and strife of school and college he grew to manhood with (as he expressed it) "a fine free healthfulness," and with faculties self-poised and balanced.

At Smithfield, at Uxbridge, and at a well-known Friends' institution in New York, Bartlett obtained a very thorough preliminary education. Details of his medical course are not at hand, but after studying with Dr. Willard, of Uxbridge, Drs. Greene and Heywood, of Worcester, and Dr. Levi Wheaton, of Providence, and attending medical lectures at Boston and at Providence, he took his doctor's degree at Brown University in 1826, a year before the untimely end of the medical department.[2]

In June, 1826, Bartlett sailed for Europe, and the letters to his sisters, which, with other Bartlett papers, have been kindly sent me by his nephew, the Hon. Judge Bartlett, of the New York Court of Appeals, give a delightful account of his year as a student abroad. He remained in Paris until December; then, in company with his fellow-student, Dr. Southwick, he visited the chief cities of Italy, returning to Paris early in March. The month of May, 1827, was spent in London, and he sailed from Liverpool June 8th. Unfortunately the letters to his sisters contain very few references to his medical studies, but I have extracted a few memoranda from them.

Writing August 24, 1826, he says: "The celebrated Laennec died at his country residence on the 13th of the present month. The publication in 1819 of a new method of ascertaining diseases of the chest forms an era in the history of medicine. M. Laennec fell a victim to one of those diseases the investigation of which by himself has enriched the field of science, contributed to the alleviation of human suffering, and given his own name a high rank among the great and the good men of his age." He asked that this memorandum should appear in the Providence papers.

Writing September 4th, he speaks of attending every day at the Jardin des Plantes to hear the lectures of Cloquet and Cuvier.

One of the professors at the medical school, he says, looked more like a jolly stage driver or a good-natured, blustering butcher than anything else. "He lectures sometimes standing, and sometimes leaning against a post, or straddling over a high stool, flourishing a lancet in one hand and a snuff-box in the other, on the contents of which he is continually laying the most inordinate contributions. He wears during the time an old rusty looking black cap. The familiarity of the distinguished surgeons and physicians with their students struck me at first sight very forcibly, being in such perfect contrast to the proud port and haughty carriage of some of our New England professors. I wish they might step into the Hôtel Dieu and La Charité and take a lesson or two of Boyer and Dupuytren, barons of the Empire, and two of the most distinguished surgeons in the world."

In the letter of October 10th he says, "The public lectures opened this week, and we are continually engaged from half-past six in the morning till bedtime. Visits are made at all the hospitals by candle-light, and a lecture delivered at most of them immediately after the visit."

He speaks of attending the lectures of Geoffroy St. Hilaire, who, he says, "lectures very badly; his ges-

[1] An address delivered before the Rhode Island State Medical Society, December 7, 1899.

[2] Parsons closes his *Historical Tract on the Brown University Medical School* with the sentence, "Whether this city, the second in New England, shall become the seat of such a school (that is, a revived department of medicine) must depend very much on the zeal, persistence and ability of its physicians." May I be permitted to remark, Mr. President, that the existing conditions are singularly favorable for a small first-class school. Here are college laboratories of physics, chemistry and biology, and here is a modern hospital with one hundred and fifty beds. What is lacking? Neither zeal, persistence nor ability on the part of the physicians, but a generous donation to the University of a million of dollars with which to equip and endow laboratories of anatomy, physiology, pathology and hygiene. These alone are lacking; the preliminary scientific school is here; the clinical school is at your doors; the money should be the least difficult thing to get in this plutocratic town. The day has come for small medical schools in university towns with good clinical facilities.

tures, though he is a Frenchman, are exceedingly awkward, and he has a sing-song tone like that which one often hears in a Methodist or Quaker preacher."

Bartlett probably acquired in Paris the three principles which Oliver Wendell Holmes said that he had learned: "Not to take authority when I can have facts; not to guess when I can know; not to think a man must take physic because he is sick."[3]

Strangely enough I find no reference in these Paris letters to the man of all others who influenced Bartlett most deeply. In Louis, even more than in Laennec, the young American students of that day found light and leading. The numerical method, based on a painstaking study of all the phenomena of disease in the wards and in the dead-house, appealed with peculiar force to their practical minds, and Louis's brilliant observations on phthisis and on fevers constituted, as Bartlett remarked, a new and great era in the history of medical science. I cannot find any definite statement of Bartlett's relations with Louis in 1826–27, at which period the latter was still working quietly at La Charité. His monograph on phthisis had been published in 1825, and had at once given him a reputation as one of the great lights of the French school. He was at this time very busy collecting material for his still more important work on typhoid fever, and it is scarcely possible that Bartlett could have frequented La Charité without meeting the grave, unobtrusive student, who, with note-book in hand, literally lived in the wards and in the dead-house. Secluded from the world, living as a voluntary assistant to Chomel in this quiet haven of observation, apart from the turbid seas of speculation which surged outside, Louis for seven years pursued his remarkable career. Whether or not Bartlett came into personal contact with him at this time cannot be decided. However this may be, subsequently the great French clinician became his model and his master, and to him he dedicated his first edition of the "Fevers," and his "Essay on the Philosophy of Medical Science."

For a young man of twenty-two, these letters — written offhand — show an unusually good literary style, and many incidental references indicate that he had received a general education much above the average. The strong Christian spirit which he felt all through life is already manifest, as may be gleaned from one or two expressions in the letters. Writing September 4, 1826, to his sisters, he refers to the death of a dear friend and her little sister. "There is a cheering consolation in the reflection that 'of such is the kingdom of heaven,' and that their spirits have gone in perfect and sinless purity to their home of bliss, and we may believe that they in their turn have become guardian angels to those who cherished and protected them here:

> 'They were their guardian angels here,
> They guardian angels now to them.'"

In 1827, shortly after completing his twenty-third year, Bartlett settled at Lowell, then a town of only 3,500 inhabitants, but growing rapidly, owing to the establishment of numerous mills. This was his home for nearly twenty years, and to it, and later to Woonsocket, he returned in the intervals between his college work in different sections of the country. As Dr. D. C. Patterson remarks, "He became at once the universal favorite, and began to take a deep interest in the physical welfare of the townsmen." In 1828 he delivered lectures before the Lowell Lyceum on contagious diseases, and he gave frequent popular lectures on sanitation and hygiene. In 1828 he was the orator on the Fourth of July. In 1836 he delivered a course of popular lectures on physiology.

Evidently Bartlett had the "grace of favor" in a remarkable degree. Bishop Clark pictures him in those days in the following words: "Some twenty-five years ago, I used to meet a young man in the town of Lowell, whose presence carried sunshine wherever he went; whose tenderness and skill relieved the darkness of many a chamber of sickness, and whom all the community were fast learning to love and honor. Life lay before him, full of promise; the delicate temper of his soul fitting him to the most exquisite enjoyment of all the pure delights of nature, and his cheerful temperament giving a genial and generous glow to the refined circles of which he was one of the chiefest ornaments."

When only thirty-two, before he had been in Lowell ten years, he was elected by a respectable majority as the first mayor of the city, and he was re-elected the following year. A letter from the Hon. Caleb Cushing, dated April 20, 1841, gives us an idea of the estimate which a clear-headed layman placed upon him. "Dr. Bartlett enjoys in the city of Lowell the unqualified respect of that community, and its affectionate esteem,— respect and esteem due alike to his public relations to that city, as formerly its popular and useful chief magistrate, and at all times one of its most patriotic and valued citizens; to his unblemished integrity of character and amenity of deportment; to his eminence in his profession; to the endearments of private friendship; and in general to his talents, accomplishments, manners and principles."

To two interesting episodes in his life at Lowell I may refer at greater length. The rapid growth of the industries in Lowell had brought in from the surrounding country a very large number of young girls as operatives in the mills, and their physical and moral condition had been seriously impugned by writers in certain leading Boston papers. These charges were investigated in a most thorough way by Bartlett, who published in the *Lowell Courier* in 1839, and republished in pamphlet form (1841) his well-known "Vindication of the Character and Condition of the Females Employed in the Lowell Mills." This is a very strong paper, based on careful personal investigations, and really proved to be what the title indicated. It did not, however, escape without adverse criticism, and among the Bartlett papers there is a review of the "Vindication" by a citizen of Lowell in 1842, which presents the other side of a picture, by no means a pleasant one, of the prolonged hours of the operatives and their wretched life in boarding houses.

One of the most interesting incidents of his life at this period was the reception to Dickens, whose visit to Lowell occurred during Dr. Bartlett's mayoralty. In the "American Notes" Dickens speaks of the girls as "healthy in appearance, many of them remarkably so, and had the manners and deportment of young women, not of degraded brutes of burden." Oliver Wendell Holmes says, referring to this occasion: "I have been told a distinguished foreign visitor (Charles Dickens), who went through the whole length and breadth of the land, said that of all the many welcomes he received from statesmen renowned as orators, from men whose profession is eloquence, not one was so

[3] Morse's Life, vol. i, p. 109.

impressive and felicitous as that which was spoken by Dr. Bartlett, then mayor of Lowell, our brother in the silent profession, which he graced with these unwonted accomplishments."

In 1840 he was elected to the Legislature of the State of Massachusetts and served two terms. In 1845 he was nominated by the Governor a member of the Board of Education of the State in the place of Jared Sparks. Holmes, who was familiar with Bartlett at this period of his career, has left on record the following charming description: "It is easy to recall his ever-welcome and gracious presence. On his expanded forehead no one could fail to trace the impress of a large and calm intelligence. In his most open and beaming smile none could help feeling the warmth of a heart which was the seat of all generous and kindly affections. When he spoke his tones were of singular softness, his thoughts came in chosen words, scholar-like, yet unpretending, often playful, always full of lively expressions, giving the idea of one that could be dangerously keen in his judgments, had he not kept his fastidiousness to himself, and his charity to sheathe the weakness of others. In familiar intercourse — and the writer of these paragraphs was once under the same roof with him for some months — no one could be more companionable and winning in all his ways. The little trials of life he took kindly and cheerily, turning into pleasantry the petty inconveniences which a less thoroughly good-natured man would have fretted over."

II.

For many years there was in this country a group of peripatetic teachers who, like the Sophists of Greece, went from town to town, staying a year or two in each, or they divided their time between a winter session in a large city school and a summer term in a small country one. Among them Daniel Drake takes the precedence, as he made eleven moves in the course of his stirring and eventful life. Bartlett comes an easy second, as he taught in nine schools. Dunglison, T. R. Beck, Willard Parker, Alonzo Clark, the elder Gross, Austin Flint, Frank H. Hamilton and many others whom I could name, belonged to this group of wandering professors. The medical education of the day was almost exclusively theoretical; the teachers lectured for a short four months' session; there was a little dissection, a few major operations were witnessed, the fees were paid, examinations were held, and all was over. No wonder, under such conditions, that many of the most flourishing schools were found amid the sylvan groves of small country towns. In New England there were five schools in small towns, and in the State of New York the well-known country schools at Fairfield and Geneva. As there was not enough practice in the small places to go round, the teachers for the most part stayed only for the session, at the end of which it was not unusual for the major part of the faculty, with the students, to migrate to another institution, where the lectures were repeated and the class graduated. T. R. Beck's introductory lecture, in 1824, at Fairfield, "On the Utility of Country Medical Institutions," pictures in glowing terms their advantages. One sentence brought to my mind the picture of a fine old doctor, on the Niagara peninsula, a graduate of Fairfield, who possibly may have listened to the very address. Dr. Beck asks: "What is the clinical instruction of the country student? It is this — after attending a course of lectures on the several branches of medicine and becoming acquainted with their general bearing, he during the summer repairs to the office of a practitioner; attends him in his visits to his patients; views the diseases peculiar to the different districts; observes the treatment that situation or habits of life indicate and from day to day verifies the lessons he has received. Here, then, is a direct preparation for the life he intends to pursue." And I may say that it was just this training that made of my old friend one of the best general practitioners it has ever been my pleasure to know.

In the letters we can follow Bartlett's wanderings during the next twenty years, from the time of his appointment to one of the smallest of the schools to his final position as one of the chief ornaments of the leading school of New York. In 1832 he held his first teaching position, that of professor of pathological anatomy and of materia medica in the Berkshire Medical Institute, at Pittsfield. The following is an extract from a letter to Dr. John Orne Green, dated Pittsfield, November 25, 1833: "The character of the class is said to be superior even to that of last year. We have a large number of excellent students. Parker is as popular as ever, and Professor Childs has the credit of having improved very much in his manner of teaching. The members of the class are attentive to their studies, eager for knowledge, and regular in their attendance on the lectures. I have lectures, most of the time, twice a day, at 10 A. M. and at 2 P. M. I shall finish my course on materia medica by the middle of this week, and the remainder of my time will be occupied with lectures of medical jurisprudence and pathological anatomy. The commencement will be on Wednesday of week after next."

He held the chair at Pittsfield for eight sessions. Among his colleagues were Childs, Dewey and Willard Parker, who was a very special friend. In a letter of October 2, 1836, he says: "Parker, with his sunny face and his hearty welcome, was in a few minutes after my arrival. It does one good to meet such men."

In 1839 he was appointed to the chair of practice in Dartmouth College, Hanover, N. H., the school founded by Nathan Smith in 1798. In a letter to his friend, Green, dated September 8th, he gives brief sketches of some of his colleagues, among them a delightful account of Oliver Wendell Holmes, then a young man of thirty. "Dr. Holmes you know something of. As a teacher there is no doubt of his success, although he will not show himself during this his first course. He has his anatomy — some of it at least — to study as he goes on, and he has not yet got the whole hang of the lecture-room — he does not give himself his whole swing. His attainments in medical science are extensive and accurate, and his intellectual endowments are extraordinary. His mind is quick as lightning and sharp as a razor. His conversational powers are absolutely wonderful. His most striking mental peculiarities consist in a power of comprehensive and philosophical generalization on all subjects, and in a fecundity of illustration that is inexhaustible. His talk at table is all spontaneous, unpremeditated, and he pours himself forth — words and thoughts — in a perfect torrent. His wit and hu-

mor are quite lost in the prodigal exuberance of his thoughts and language." In this same letter is the following characteristic memorandum, illustrating his desire to see the schoolhouses beautified and adorned. "One word about the High School House. Pray, don't forget in the planning of the rooms my plan for some embellishments. Even if we should get some busts I do not know that niches would be any better than suitable stands or shelves. I hope we shall raise, by a fair, from five hundred to one thousand dollars for pictures, etc., for ornaments to the two principal rooms." It is quite possible that Bartlett lectured both at Woodstock and at Pittsfield, as the terms were purposely arranged so as not to clash, and in the catalogue of the Vermont Medical College, 1844, there is an advertisement of the Berkshire school. The names of Bartlett and Holmes occur only in the 1839–40 and 1840–41 announcements.

In 1841 he accepted the chair of the theory and practice of medicine in the Transylvania University, Lexington, at that time the strongest and best-equipped school in the West.[4] On his way to Lexington he visited New York, Philadelphia, Washington and Baltimore, and in a letter to Green, of September 7, 1841, he gives an interesting account of the men he met in these cities. One item is of interest to Baltimoreans: "Day before yesterday I spent with Dr. Nathan R. Smith, at Baltimore, on my return from Washington. I found him very attentive and hospitable. He took me into his gig and went to see some of his patients. He has a pretty large surgical practice, and is, I should think, a man of excellent sound sense, industrious, and devoted to his profession — not so *great* a man as his father, but a very capital good fellow. He speaks well of Lexington and the school — says it is the best appointed school in the country."

In his letters there are interesting descriptions of his life in Lexington, some of which are worth quoting: "In the school we are getting on very well. The class is of a good size, rather larger than last year, worth a little over $2,000, intelligent, attentive, well behaved. I have given fifty-eight lectures, and we have just six weeks more. My own success has been good enough, I think. So far as I have means of judging, my instruction is entirely satisfactory, to say the least. My colleagues — Dudley, you know, is the great man here. He has many peculiarities. He is very much pleased with me. He teaches singular doctrines, and follows, in many things, a practice very peculiar to himself. The other day he tied the common carotid before the class in an anastomosing aneurism in the orbit; patient from St. Louis. Day before yesterday he cut for the stone; patient, a lad from Mississippi. He has two more cases of stone here for operation. He is exceedingly cautious; sends many patients, of all sorts, away without operation. Uses the bandage for everything almost in surgery — tart. ant. and starvation, or low diet, in most diseases. He had a pretty large property, 'a garden' as he calls it, of 150 acres or so, a mile from the city. Richardson, in obstetrics, boards with me, a plain, common-sense man, who fought a duel in early life with Dudley; has made a pretty large fortune here in practice, and now lives in the country eight miles or so from here, on a farm of 500 acres. The style of lecturing here is quite different from what it is in the East — more emphatic, more vehement. It is quite necessary to fall somewhat into the popular style. We stand, in the lecture-room, on an open platform with only a little movable desk or table, on which to lay our notes. On the whole I like it better than being seated in a desk, as they are in Boston." (December 21, 1841.)

In March, 1843, he writes to Green that his receipts for the session have been more than $2,000. "There are a few good families who send for me, and I get occasionally a consultation. We never make a charge less than a dollar; and consultation visits in ordinary cases — the first visit — are $5.00. These few enable me, situated as I am, to make even a small and easy business somewhat profitable. I have made one visit, twenty-five miles distant, for which the fee was $25; and I saw a second patient, at the same time, incidentally, for $5.00 more. You see from all this, that my place gives me rather more money than I could earn in Lowell, for a much smaller amount of responsibility and labor. I have hardly, indeed, been called out of bed during the winter. In a business point of view I feel quite content with my situation."

From an interesting account of a consultation in the country we can gather how the planters of those days did their own doctoring: "Col. Anderson belongs to a class of men, pretty large, I think, in this State, — rather rough, with a limited school education, but intelligent, shrewd, clear-headed, and enterprising. He has a farm, entirely away from any travelled road, of 500 acres; but his principal business is that of bagging and soap manufacturing, his farm serving only to feed his family. This consists of about one hundred, eighty or more of which are his negroes. He has no physician, whom he is willing to trust, nearer than Lexington; and in nearly all common acute diseases treats the patient himself. His daughter, Mrs. Breck, was seized with acute pleurisy, soon after miscarriage, and her father had bled her twice, pretty freely, and given calomel and antimony, before any physician had seen her. He had followed the same course a year ago in the case of his wife." (February 18, 1844.)

In the same letter he says: "Typhoid fever has been very widely prevalent in many parts of Kentucky for the past year. There were, it is said, 200 deaths in an adjacent county last summer and fall. It is evidently the common fever of this country, with all the features so familiar to us at the East."

In the autumn of 1844 he accepted the chair of the theory and practice of medicine at the University of Maryland. Among the letters I find but one from Baltimore, and that is to Oliver Wendell Holmes about a review of his book, "The Philosophy of Medical Science," which had appeared that year.

In 1844 he accepted the chair of materia medica and obstetrics in the Vermont Medical College, the session of which began in March and continued for thirteen weeks. Among his colleagues were Alonzo Clark, Palmer and Edward M. Moore and later John C. Dalton. Bartlett's name occurs in the catalogues of the school until 1854, the year before his death. In May, 1845, he and Mrs. Bartlett sailed for Europe. In a letter to Green, July 12th, there is an interesting reference to Louis and to James Jackson, Jr. "I have seen a good deal of Louis, who has been very civil and attentive. I dined with him soon after my arrival, and met there, amongst others, Leuset and Grisolle, two of his most intimate medical friends. I never see him

[4] History of the Medical Department of Transylvania University and its Faculty, by William J. Calvert, Johns Hopkins Hospital Bulletin, August, September, 1899.

that he does not speak of young Jackson — *ce pauvre Jackson*, as he calls him. He told me, with a great deal of feeling, that Jackson, the last night that he spent in Paris, wrote him a letter from his hotel, which was moistened with his tears, and that he thought Jackson was almost as much attached to him as to his father."

In another letter he speaks, too, of his very cordial reception by Louis. They spent the winter on the Continent, travelling about, chiefly in Italy, and in the spring went to London. In a letter dated June 17, 1846, there is an interesting sketch of a magnetic séance at the house of Professor Elliotson, of University College, who subsequently came to such a grief over hypnotism. "And then he ran full tilt off upon his hobby, 'animal magnetism,' calling it one of the most sacred and holy of all subjects, one of the greatest truths, and so on. Dr. Forbes, the editor, he spoke of as 'a wretch,' all because the doctor has shown up some of Elliotson's magnetic operations. Dr. E. afterwards invited me to see some magnetic phenomena at his house. I went about three o'clock in the afternoon, and found his spacious and elegant drawing-room quite filled with well-dressed gentlemen and ladies, assembled for the same purpose. The doctor had two subjects, one a young, delicate looking girl, and the other a damsel of a certain age, upon whom he performed the standard and stereotyped experiments — putting them into the magnetic sleep, stiffening their limbs, leading them round the room with a common magnet, exciting their phrenological organs, and so on. I can only say that I was not specially delighted with Elliotson's manner, and that if I was to choose a man by whom I should swear, without using my own eyes, certainly it would not be him."

In the same letter he speaks of having seen a great deal of Forbes, editor of the *Medico-Chirurgical Review;* of Marshall Hall, of Walshe, "a young man and a good fellow"; of Sir Henry Holland, and of that interesting American physician, who lived so long in England, Dr. Boott, and of Dr. Southwood Smith, at the Fever Hospital.

On his return from Europe we find him during the session of 1846–47 in his old chair at Lexington, whence he writes on March 18, 1847, to his friend Green, from which a paragraph relating to the second edition of his book on "Fevers" may be quoted: "I have been drudging away all winter at my second edition. I do not feel any great interest in it, though I hope and intend to make a good book of it. The first edition, for a monograph, has sold very well, mostly at the South and West; so well at least that Lea & Blanchard propose publishing the second edition and paying also something for the right to do so."

The next sessions of 1847–48–49 were also at the Transylvania University. In the spring of 1848 there is a letter from Pliny Earle, dated April 16th, saying that he had received a catalogue of the Medical Department of Transylvania University, from which he had received his first intimation of Bartlett's resignation of the professorship. He asks Bartlett's advice as to the propriety of applying for the position.

On March 13, 1849, he received the appointment as professor of the theory and practice of medicine in the University of Louisville. At this time, in a letter from Dr. J. Cobb, we have the first intimation in the letters of ill health, as there is the sentence: "Accept my best wishes for your complete restoration to health."

The University of Louisville had drawn heavily upon the classes of the other Western schools, chiefly at the expense of Lexington, and the Faculty when Bartlett joined it was very strong, comprising such well-known men as the elder Gross, the elder Yandell, Rogers, Benjamin Silliman, Jr., and Palmer.

The condition of medical politics at that time in the town of Louisville was not satisfactory, and a new school had been started in opposition to the University, and among the Bartlett letters are a number from the elder Yandell which show a state of very high tension. Bartlett spent but one session in Louisville. He and Gross accepted chairs in the University of New York. The appointment of the former to the chair of the institutes and practice of medicine is dated September 19, 1850. From some remarks in a letter from Yandell it is evident that Bartlett did not find the position in New York very congenial. Gross found his still less so, and returned to Louisville the following year. J. W. Draper, the strong man of the University School, had secured Bartlett and in a letter dated August 12, 1850, he promised him a salary of at least $3,500. The same letter shows how thoroughly private were the medical schools of that day: "It perhaps may be proper to repeat what is the condition of the real estate. The college building is owned equally by the six professors. Its estimated value when Dr. Dickson left us in the spring was $78,600, and there is a mortgage upon it of $48,000, bearing interest at six per cent. Excluding this mortgage the share of each professor is therefore $5,000, and a mutual covenant exists among us that on the retirement or decease of one of the Faculty his investment shall be restored to him or his heirs — the new-comer starting in all respects in the position he occupied."

During these years Bartlett seems to have been very busy at work at the microscope, and there is a letter from Alonzo Clark, dated June 15, 1848, descriptive of a fine new Oberhauser (the Zeiss of that day), and in 1851 there is an interesting letter from Jeffries Wyman, giving a list of the most important works on invertebrate zoölogy.

Among his colleagues in the University were Draper, Martyn, Paine and Patterson. Things do not seem to have worked very smoothly. In the spring of 1851 overtures were made to him from the College of Physicians and Surgeons of New York, in which Faculty were his warm friends, Alonzo Clark and Willard Parker, and he was elected to the chair of materia medica and medical jurisprudence in the following year, in 1852. Here he lectured during the next two sessions until compelled by ill health to retire.

I may fittingly conclude this section of my address with a sentence from a sketch of his life by his friend Elisha Huntington: "Never was the professor's chair more gracefully filled than by Dr Bartlett. His urbane and courteous manners, his native and simple eloquence, his remarkable power of illustration, the singular beauty and sweetness of his style, all combined to render him one of the most popular and attractive of lecturers. The driest and most barren subject, under his touch, became instinct with life and interest, and the path, in which the traveller looked to meet with briers and weeds only, he was surprised and delighted to find strewn with flowers, beautiful and fragrant. There was a magic about the man you could not withstand; a fascination you could not resist."

(To be continued.)

THE VALUE OF X-RAY EXAMINATIONS IN THE LESS FREQUENT DISEASES OF THE CHEST ILLUSTRATED BY THEIR USE IN THOSE CASES WHERE ANEURISM IS PRESENT OR SUSPECTED.

BY FRANCIS H. WILLIAMS, M.D., BOSTON.

IT is now recognized that x-ray examinations are of special value in diseases of the organs within the chest. In the hands of those trained in their use they point out very early departures from the normal in pulmonary tuberculosis; assist in the early diagnosis of other diseases of the lungs and pleuræ, and enable the physician to determine the size of the heart and displacements of that organ more accurately than has hitherto been done. They are also valuable in the less frequent diseases that have their site in the chest, behind the sternum, and I will illustrate their aid in this direction by presenting several cases of aneurism. The diagnosis of these cases is often difficult and sometimes impossible by the ordinary methods. Aneurisms are not infrequently overlooked in their early stages, the time when there is the best opportunity for prolonging life; or, if recognized, their extent is not appreciated; or their presence is suspected when they do not exist. Therefore, in order to get as accurate a knowledge as possible of the condition of the thoracic cavity, the chest should be examined by means of the fluorescent screen, both in front and behind. An x-ray photograph may also be taken, and should be taken if there is a question of a new growth. This x-ray examination of the chest may show, for example, that the outlines seen on the fluorescent screen, on one or both sides of the sternum, differ from those that present themselves in health. Whether or not this variation from the normal is due to a new growth or to an aneurism cannot always, of course, be determined by the x-rays alone. They furnish only one way, though a very valuable way, of studying this region.

But if any departure from the normal outlines in this portion of the thorax is found, the physician should determine whether or not there is pulsation and whether the abnormal outline is nearer the front or the back of the chest. This latter fact can be ascertained by making two examinations of the patient; that is, first with the fluorescent screen placed on his chest, and second, on his back. To accomplish this end the patient may be turned, or the Crookes tube may be moved. The spinal column should be examined to see if there is any displacement of the vertebræ which might push the aorta to one side; for if through disease in the vertebræ or some neighboring part the descending aorta is pushed a little to the left, this condition might be confounded with an aneurism, if the knowledge of this possibility were not in mind and this region carefully examined. If there is disease of the spine, producing displacement of the aorta, a careful x-ray examination of the line of the vertebræ would reveal the cause of its unusual position.

Moreover, in some healthy individuals the aorta is more prominent than in others. I have examined some persons in whom there was no trace of aneurismal dilatation, but in whom the outline and even the pulsation of the descending aorta could be followed.

Further, care must be taken to distinguish between new growths in the thorax and an aneuri-m. For this purpose a careful determination of the position of the outlines, not only laterally but anteroposteriorly, is important. If, for example, when examining the chest, a small shadow is seen on the fluorescent screen in the neighborhood of the descending aorta on the left of the sternum, the physician must determine whether it is cast by something situated in the front or back of the chest. For if a small shadow on the left of the sternum is produced by something in the front of the chest, the diagnosis of aneurism may be excluded. The position of the object producing the shadow as regards its relation to the back and front of the chest of the patient may be readily determined by a method I devised for locating foreign bodies.[1] As a rule, an aneurism of the ascending portion of the aorta will be found nearer the front of the chest than the back; whereas aneurisms of the descending aorta in the early stages would be found nearer the posterior portion of the chest than the anterior. If pulsation of the outline is seen, we probably have to do with an aneurism, though it is possible that a movement might be given to a new growth situated over the aorta.

Let me diverge a moment here from the immediate subject to say that new growths in the chest may be often recognized better by x-ray examination in the early than the later stages, because when the disease has progressed so far as to fill up the thoracic cavity it is difficult to know whether the appearances seen on the screen are due to the presence of a new growth or to some conditions which make the lungs and pleuræ denser than normal. Furthermore, if a new growth is present and if surgical interference is necessary, it is of the first importance that a diagnosis be made at the earliest moment.

In aneurisms of much size the heart is often displaced or greatly enlarged. In making a diagnosis of a given case, the outline of the shadow seen on the screen should be carefully drawn upon the skin with a suitable pencil, both on the front and back of the chest, and, as already stated, the physician should determine whether the object causing the shadow is nearer the front than the back of the chest. The history of the case should also be carefully considered, the patient's age and the duration of the symptoms; for while in some cases the diagnosis of an aneurism is a very simple matter with the aid of the x-rays, it may in others be difficult to recognize the cause of the abnormal outline found by means of the fluoroscope.

In general, it may be said that aneurisms of the thoracic aorta may be seen by the x-rays before there are physical signs; that where it is desirable to be sure that no thoracic aneurism exists the x-ray examination can render much service. There are cases which produce troublesome symptoms, such as dyspnea, pain in the chest, and dulness to percussion over an area which might easily be the site of an aneurism; these symptoms may give the physician much anxiety if he is led to consider that they are due to this cause. In these cases it is a satisfaction to the patient and to the physican to be able to exclude the presence of an aortic aneurism, and while by means of an x-ray examination we cannot always be sure that the appearances seen are caused by an aneurism, we may be quite sure that no aneurism is present if the x-rays give

[1] See Medical and Surgical Reports, Boston City Hospital, January, 1897.

normal outlines in the thoracic cavity when careful examination of the patient in various positions has been made. Herein lies one of the advantages of this method of examination. It may give us greater assurance of the absence of an aneurism of the aorta in suspected cases than any other evidence that we can have. Other causes may produce outlines on the fluorescent screen which simulate those given by aneurisms, but the history, want of pulsation, position, etc., will assist us to recognize the true cause of the appearances.

Cases of aneurism may give physical signs suggestive of tuberculosis, neuralgia, or esophageal stricture. The cases given below illustrate some of these points.

I have examined with the x-ray 34 cases where aneurism was suspected, and one case to determine the size of the heart, when an unsuspected aneurism was discovered; 35 cases in all. Of these cases, 15 had typical aneurisms; six had more or less dilatation of some portion of the aortic arch; one showed an outline suggestive of aneurism of the aortic arch, but there was no pulsation. This abnormal appearance was proved by an autopsy to be due to a mass of glands. The remainder gave normal outlines in the region where an aneurism had been suspected.

The number of cases, 15, is not sufficient to justify an elaborate analysis, but some detail and the accompanying charts will, I think, be of interest. In 13 of the 15 cases the aortic arch was the seat of the aneurism; in one of these there was a second aneurism in the innominate artery also; in the fourteenth case there were two aneurisms, one in the innominate and another in the subclavian artery; in the fifteenth case the aneurism was in the subclavian artery. Eleven of these cases were males and four females; 11 were between thirty-eight and forty-five years of age; two were thirty-three; one was forty-nine and one fifty-nine and one twenty-nine. A syphilitic history was obtained in four cases. Pain was present in 12 cases, and alteration of voice in 11. Laryngoscopical examination was made in seven of these last cases, which showed paralysis of the vocal cord. The physical examination of 12 out of 14 of the cases of aortic aneurism was given in the hospital records; in five cases there were no physical signs of aneurism; in eight cases the heart was enlarged, and in five of these there were murmurs indicative of valvular defects, four of which were aortic and one mitral. Arteriosclerosis was found in the three cases in which an autopsy was made. No nephritis was found in any case.

I desire to thank Dr. M. P. Smithwick for assisting me in getting together the notes of these cases.

ANEURISM SUGGESTING PULMONARY TUBERCULOSIS.

CASE I.[1] M. J., a man aged fifty-nine years, referred to me October, 1896, by Dr. M. P. Smithwick, illustrates the increased accuracy in diagnosis that an x-ray examination may afford. The great size of the sac seen on the fluorescent screen suggested early rupture, and therefore a frank statement of the case was made to the patient and gratefully received by him, as he was thus given an opportunity for a much-needed arrangement of business affairs.

Family history.— Father died of consumption at seventy-two years of age. It was usual for the males of the paternal branch of the family to develop that disease after fifty-nine years. Mother died of apoplexy. The patient, his family, and his physician did not doubt that he was following the family tradition and developing tuberculosis. It was not at all surprising that the mistake should be made when we compare the clinical picture of hemoptysis and cough with the physical examination, which gave râles at the left apex. The husky voice led one to suspect laryngeal tuberculosis.

Previous history.— Always "short-winded." About four years ago he suddenly became unconscious for about a minute. There was no warning, and recovery was immediate. About June 15, 1896, he began to be hoarse and grew rapidly worse, and had some cough. About this time, while running after some colts, he had marked dyspnea. This symptom has increased, although he can walk a distance if careful. On July 15th he first raised a little blood, rather dark in color, and this has occurred from time to time since, especially after talking. Four or five times since October 1st he has had short and sharp attacks of pain that start in the "pit of the stomach" and radiate to

FIG. 1. Case I.

left shoulder and down left arm to elbow. There is numbness of the left arm associated with this pain.

Physical examination.— The voice is shrill and husky. Examination of the larynx by Dr. Leland shows the left cord paralyzed and fixed in median line. The arteries are quite resistant and nodular, and somewhat tortuous. The heart area is decidedly diminished, action is regular and fairly strong. Apex beat in sixth interspace apparently outside of the nipple. The aortic first sound is rough; second sound is ringing and valvular. Lungs: resonance somewhat exaggerated. Over upper left chest, resonance, respiratory murmur, vocal fremitus and voice sounds somewhat exaggerated, especially in front. At left apex and to second rib in front are numerous fine moist râles. A faint pulsation is to be felt by pressing the chest between the two hands. It seems most marked at the junction of the second rib with the sternum.

X-ray examination made October, 1896, showed that the patient had a large thoracic aneurism, as indicated in Fig. 1.[2] Some weeks later, after returning from a drive, death occurred suddenly. There

[1] This case was published by me in the Medical and Surgical Reports of the Boston City Hospital, 1897.

[2] The cuts are reproductions of the tracings made by means of the fluorescent screen; I have not attempted to give reproductions of x-ray photographs as these reproductions are so often unsatisfactory.

was profuse arterial hemorrhage from the mouth. Failure to observe necessary precautions may have hastened the end.

ANEURISM OF AORTA, WITH PERFORATION INTO ESOPHAGUS; AUTOPSY.

Such cases remind us that aneurism should be excluded before we dilate a supposed esophageal stricture.

CASE II. E. H. was admitted to the service of Dr. George G. Sears at the Boston City Hospital, June 13, 1898, and was referred to me for x-ray examination June 17th. The following history was given: Family history was negative. Past history: neither syphilis nor rheumatism; alcohol in moderation.

Present illness.— Slight pain began in cardiac region five months ago; a month later it was felt in front of right chest; and two weeks later just to right of spinal column at level of lower angle of scapula; it was a dull ache and has persisted and increased in these three places; cough increases the pain but full

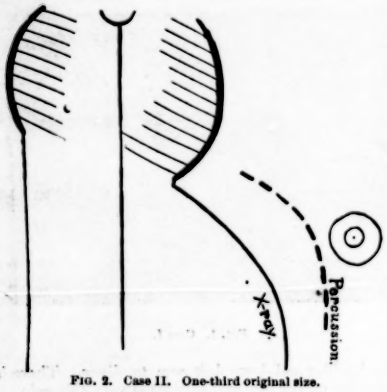


FIG. 2. Case II. One-third original size.

inspiration does not; on swallowing, pain begins at level of thyroid and extends along the spine to lower dorsal region; solids are regurgitated occasionally; meat causes severe pain unless finely minced; no cough nor palpitation; dyspnea and hoarseness three weeks.

Physical examination.— Left vocal cord partially paralyzed; pulmonary resonance good, being slightly exaggerated over right front; respiration harsh and wheezy; on full inspiration sounds much prolonged on right side; cardiac area extends from mid-sternum to nipple line; sounds normal; apex in fifth interspace; pulsations seen over greater part of sternum; radial pulse regular, good strength and volume; no edema of extremities; urine normal. Diagnosis of aneurism of aorta.

X-ray examination.— Figure 2 gives the outline of the aneurism seen on the fluorescent screen, as well as the left border of the heart, which border was much nearer the median line than Dr. Sears and I had placed it by percussion.

To go back, three weeks after admission patient raised a pint of dark blood. Two days later felt unable to swallow solids or liquids, and after two more days the stools were tarry. Died. A post-mortem examination was made by Dr. Mallory, and I quote a part of the record. "Intestines contain dark material. In posterior wall of transverse arch of aorta, three millimetres below beginning of left subclavian artery, is an opening 12 x 18 millimetres. This opening is directly connected with a reddish-gray clot projecting through anterior wall of esophagus by an opening 4 x 5 centimetres with thin, retracted, dark greenish edges. Lower border of esophageal perforation is on level with bifurcation of trachea. Intima of aorta everywhere thickened. Many elevated yellowish placques. No areas of softening nor calcification. Weight of heart 270 grammes. Valves and cavities normal. Some fatty degeneration of muscle microscopically. Lungs very edematous.

"*Anatomical diagnosis.*— General arteriosclerosis. Aneurism of aorta with perforation into esophagus."

SUBCLAVIAN ANEURISM; X-RAY EXAMINATION BEFORE OPERATION TO EXLUDE EXTENSION BELOW CLAVICLE.

Before ligating the subclavian, carotid, or innominate arteries for aneurism, it is manifestly desirable to know the extent of the aneurism, and whether or not there is also an aneurism of the aorta. In the following case the innominate artery was ligated by Dr. George W. Gay, and the case was reported in the *Boston Medical and Surgical Journal*, July 22, 1897.

CASE III. A. McC., widow, thirty-nine years of age, was admitted to my service at the Boston City Hospital, February, 1895.

Family history.— Mother died of pulmonary tuberculosis.

Past history.— No history of syphilis or rheumatism. Some months ago raised blood several times during two days. Five days before admission commenced to be restless and nervous, with palpitation and dyspnea. Weak and dizzy until the afternoon of the fifth day, when she raised blood for some hours before and after being brought to the hospital. Neither in this attack nor previously had there been nausea or cough. On exertion her "heart beat in her throat." Three times during that month she raised a small amount of blood, apparently when excited.

Physical examination.— Radial arteries not resistant, their pulsations equal, regular, poor volume and strength. Cardiac area normal; apex beat in fourth interspace, just inside mammary line; action regular and fairly strong; at apex a very low-pitched systolic murmur not transmitted toward axilla; similar murmurs heard over the base. Along both sides of vertebral column from occiput to last dorsal vertebra is a rather low-pitched systolic murmur, most distinct at first dorsal vertebra and diminishing in intensity up and down. In supraclavicular notch and above right clavicle is an unusually marked pulsation. Pulmonary resonance and respiration good. Abdomen negative except for a very movable right kidney.

From this time until October, 1896, when patient was admitted to Dr. Gay's service for operation, she returned to the hospital at intervals, for examination by Dr. Smithwick. Soon dysphagia commenced; dyspnea was accompanied by some paroxysms of coughing, and the throbbing in the neck was attended by dull pain extending to the right axilla and back. Exertion and excitement increased these symptoms.

Hoarseness developed. During the six months before operation the symptoms were all worse, and her condition wretched. With the exception that the pulsation was more marked, the physical examination had not changed since February, 1895. Aneurism was suspected then, but was now certainly present.

To determine the lower boundary of the aneurism, and to ascertain if the aortic arch were involved, Dr. Gay referred the case to me for x-ray examination, with diagnosis of fusiform aneurism of the innominate, subclavian and carotid arteries. *The x-ray examination* showed the outline of the portion of the aneurism above the clavicle, and demonstrated that there was no extension of the aneurism below the clavicle and that the lungs were normal. The x-ray examination was confirmed by the autopsy.

DIAGNOSIS OF ANEURISM CONFIRMED BY X-RAY EXAMINATION.

CASE IV. C. S., a house painter, thirty-six years old, had a well-defined aneurism of the aorta, but no history of dyspnea.

History. — Syphilis eighteen years ago; well until

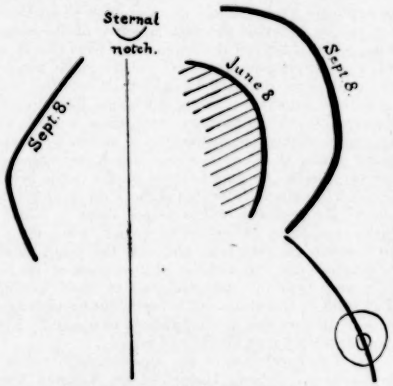


FIG. 3. Case V. One-third original size.

eight months ago, when dull pain with occasional paroxysms of sharp pain began in front of chest, in left arm to the elbow, and later shot up left side of back of neck and head. The pain has been constant from the beginning, and nine weeks ago became so excruciating that he was compelled to cease working. No weakness or tenderness of the arm; hoarse five or six weeks; no dyspnea; constipated; appetite poor.

Physical examination. — Well developed and nourished; voice high-pitched; pupils equal and reactions normal; no paralysis of ocular muscles; neither wrist nor toe drop; grasp normal; lead line present. Tracheal tug; radial pulses alike; cardiac area and sounds normal except in second interspace to left of sternum, where first sound is prolonged and second sound slightly accentuated; at apex of left lung in front, to third rib, and behind to spine of scapula, vocal resonance and fremitus are diminished; no rales; on full inspiration right side of the chest is the more expansive. Laryngoscopic examination by Dr. Leland showed right vocal cord normal, left paralzyed.

X-ray examination showed a well-defined dark area in upper left chest, extending out from the aorta and expanding with every heart-beat. The excursion of the diaphragm on the left side was much diminished as compared with the right.

ANEURISM SUGGESTING INTERCOSTAL NEURALGIA; SUSPECTED ANEURISM CONFIRMED BY X-RAY EXAMINATION. THESE EXAMINATIONS ENABLE US TO DETERMINE WHETHER AN ANEURISM IS OR IS NOT INCREASING.

CASE V. E. M., thirty-three years of age, referred to me by Dr. J. J. Putnam, for x-ray examination with reference to aneurism. Patient had suffered with what appeared to be severe intercostal neuralgia. The pain was in his left arm, left side, and below the ribs. It had been severe for two months, sometimes by day, but especially at night. There was a specific history.

X-ray examination made June 8, 1897, showed a small aneurism of the descending portion of the aortic arch, which is indicated in the diagram (Fig. 3) by the shaded lines of the inner outline marked June 8th. A second x-ray examination made September 8, 1897, gave the outline marked in the diagram September 8th, which demonstrated that the aneurism was increasing. Later the physical signs of aneurism became well marked, the pulsation being easily palpable.

(To be continued.)

REMARKS UPON THE GUNSHOT WOUNDS OF THE REDUCED-CALIBRE RIFLES IN THE SANTIAGO CAMPAIGN.[1]

BY MAJOR LOUIS A. LA GARDE,
Surgeon, United States Army, Commanding Base Hospital, Fifth Army Corps, Siboney, Cuba.

OUR knowledge of the rifles of reduced calibre propelling armored projectiles dates from the publication of Professor Hebler's pamphlet in 1882. In his original monograph Hebler claimed certain advantages for the reduced-calibre rifle and among these were the following: (1) Lighter ammunition; (2) flatter trajectory and greater dangerous space; (3) less deviation by wind; (4) less recoil; (5) greater penetration; (6) greater accuracy; (7) the wound produced, while being sufficient to disable, is much more humane.

Some of these advantages were so apparent that they could not be refuted, while the others required the proof by experiments, or the test by actual conditions in the field.

That the ammunition is lighter there is no doubt, since a soldier who carries 100 rounds of the older ammunition can carry for the same weight about 180 of the new ammunition. That the trajectory of the new rifle is flatter, and that the dangerous space is consequently greater, is also apparent, since those versed in ballistics have shown us that the point-blank range of the older gun of the Springfield pattern is 300 yards whilst that of the Krag-Jorgensen rifle, our present service gun, is 570 yards about.

The advantage of less recoil is perfectly apparent to any one who will shoot the two last-named weapons one after the other. The remaining advantages claimed by Hebler were not so readily determined. Greater

[1] Read before the Association of Military Surgeons, September 28, 1899, at Kansas City, Mo.

accuracy and less deviation by wind had to be determined by comparison at target. Although the small-bore guns and ammunition have been perfected very much of late it is yet a fact that, in the remote ranges, the smaller and lighter projectile is more influenced by wind than the heavier and larger leaden bullet and that for these ranges it is not so accurate.

Greater penetration was another important advantage claimed by Hebler which was sustained by experiment. In unseasoned oak, firing across the grain three feet from the muzzle, the old leaden 45-calibre bullet from the Springfield rifle penetrates but 5–6 inches, whilst the steel-jacketed bullet of our present service rifle at the same distance will penetrate 19–20 inches.

The last of the advantages claimed by Hebler and the one of greatest interest to mankind was that *the wound produced, though sufficient to disable, is much more humane.* This claim could only be determined by experiments on cadavers, lower animals, and the actual conditions in battle. Experimenters set to work in all the countries from 1886 to the present time to ascertain the character of the wounds, first, on lower animals, second, on dead human bodies. The Surgeon-General of the Austrian Army, Johann Habart, Chauvel and Nimier, of the French Army, Bruns, of Germany, and many others have furnished us important data upon the effects of the new arm. In this country it was my good fortune to be able to test the rifle for the War Department in 1893.

Although there was some difference in the mechanism of the guns used by the different experimenters the projectiles which they propelled differed but little as to calibre and destructive effects. The most of the experiments were conducted at simulated ranges, whilst some few were conducted at the actual ranges. That is to say, taking our work at Frankford Arsenal as example, all of the firing was done at 53 feet. When we desired to obtain the effects of a bullet at a certain range, the charge of powder was reduced in quantity enough to give to the bullet the remaining velocity for that range. The results thus obtained were generally unanimous, and, as far as the experimenters were concerned, sufficiently conclusive.

On the other hand, there were many writers who doubted the propriety of adopting these results as similar to those which must eventually obtain on the living subject at actual ranges in battle. Inasmuch as we are now in possession of the accumulated experience of a few wars it would seem pertinent at this time to study the results of the experimenters and the conditions seen in battle side by side.

I will now review in detail the conclusions summed up at the end of our experimental work at Frankford Arsenal and compare them with what I observed in the Santiago campaign:

(1) The experimental evidence showed "the shock impressed upon a member increases with the velocity whether a bone is traversed or not. It is always greater with the leaden projectile." This diminution in shock has been one of the serious objections advanced against the adoption of the small bullet by military men. They feared that one wound would not suffice to throw a man *hors du combat*, and that he might be able to go on fighting regardless of the fact that he had been hit a number of times. Whether this is true of savage tribes, or horses in a cavalry charge, it is not true of our American soldiers. Upon inquiry among line officers in the Santiago campaign I find that as a rule to which there were very few exceptions men when hit fell back to the rear at once; and I can testify to the fact that scores of them walked back to the hospital at Siboney with wounds that were most trifling in their nature.

(2) "The explosive effects at very short range are about the same for the two projectiles. They continue however up to 350 yards with the smaller bullet and cease at about 200 yards with the leaden bullet." I only saw one case which approached anything like explosive effects in Cuba. That was the case of a captain of the Rough Riders shot in the lower third of the tibia. The wound of entrance was about the calibre of the Mauser bullet that had inflicted it, and the wound of exit was irregularly round, a half-inch in diameter. There were two smaller wounds near the wound of exit, which were undoubtedly made by spiculæ of bone which had been driven forth acting as secondary missiles. The area of fracture was about four inches above the ankle; it was marked by a cavity in which many loose fragments of bone lay, none of them measuring more than a half-inch. The wall of the cavity showed bony sand driven into the soft parts. The infrequency of explosive effects should in my opinion be attributed, (*a*) to the fact that the vast majority of the wounds were inflicted beyond the zone of explosive effects, and (*b*) since explosive effects are chiefly to be noted in the vital parts contained in rigid walls, like the brain, or in those organs containing much fluid, like the heart, liver, spleen, the alimentary tract, these wounds with explosive effects, so destructive to tissue, were numbered among the dead — a class which, unfortunately, the surgeon has no time to study on the battle field.

(3) The experimenters found that "the smaller frontage of the jacketed bullets causes them to inflict injuries resembling subcutaneous wounds when the soft parts alone are traversed, and that the small wounds of entrance and exit and the narrow track of the missiles were favorable circumstances to rapid healing." The truth of this statement is borne out by the experience of all surgeons in the Santiago campaign. Flesh wounds healed very kindly and rapidly.

(4) This conclusion of the experimenters refers to hemorrhage. Johann Habart, of the Austrian Army, who paid special attention to this subject, states "that the blood-vessels are seldom torn by the small jacketed bullet, and that when wounded they are not closed so easily by coagulation as those severed by leaden projectiles."

Some writers have deduced from this statement that alarming or fatal hemorrhage would be more frequent in future battles. The experiences of the surgeons with the line before Santiago do not confirm these apprehensions. Of the 1,400 wounded, as far as I can learn, not one died of external hemorrhage. The brachial and femoral were tied a few times in the base hospital for diffuse aneurism. One case of wound of the subclavian was operated upon in New York and died after the operation. There were five cases of gangrene from injury to blood-vessels which required amputation.

(5) "Injuries inflicted outside the zone of explosive effects upon the shafts of the long bones always show less comminution with the small bullet of hard exterior. The fissures are often subperiosteal and the fragments are larger." This was true of the Mauser bullet wounds in Cuba. It was seldom necessary to

open up the wounds for the purpose of taking out loose fragments of bone. In a number of instances there was distinct guttering of the compact substance of long bones without fracture. The mobility in some instances was so slight that it was difficult to make out a complete fracture when from the location of the wounds it was certain that the bone had been traversed.

(6) "Beyond the zone of explosive effects the projectiles of hard exterior almost invariably perforate or gutter the joint ends of bones, and the lesions of the articulations are never so grave." This conclusion tallies exactly with what we saw in Cuba. I do not recall a formal excision of a joint for the mechanical effects of the Mauser bullet. Joints were opened to turn out blood clots, and in one instance of the knee I particularly remember, to locate a lodged ball, but never for the purpose of performing an excision. There were at least 20 cases of gunshot injury of the knee-joint alone. These were immobilized and shipped North; and as far as I have been able to ascertain they have done well. These results are a great contrast to those inflicted by the larger leaden bullet, which by its highly destructive effects must have caused a number of resections and amputations.

(7) "The projectiles of hard exterior lodge less frequently in the tissues than the old leaden bullet." The experience at Santiago among the wounded of both sides has shown a surprisingly large number of lodged balls. Although I am not prepared to state that the small-calibre bullet lodges as often as the old discarded leaden bullet, the frequency with which it did lodge was remarked upon by military surgeons generally. Dr. W. E. Parker, of New Orleans, an acting assistant surgeon in the base hospital, visited the Spanish hospitals in Santiago after the surrender, and in conversation with the Spanish surgeons he learned that our Krag-Jorgensen bullet had not lodged in their wounded as often as their Mauser bullet had lodged in our men. The explanation for this would seem simple enough. It should be remembered that we were on the aggressive in a region that was practically unknown to our troops, whilst the Spaniards were perfectly familiar with every foot of ground over which we must make the advance. As trained soldiers their officers had carefully studied the range at every point. With this valuable information in their favor they were in a position to commence an effective fire at remote ranges, say at 2,000 yards and more. We could not locate them as soon as they located us, and when we did locate them we had to study the range before we could commence an effective fire. It was while we were locating them and studying the range and gradually advancing that they placed so many balls into our soldiers. When we did commence an effective fire we had reached a point where the remaining velocity of our bullet on impact was sufficient to carry it through the body. There is another explanation which may be gathered from the difference in the energy of the two bullets at remote ranges. Our bullet being larger and heavier than the Mauser has greater energy at 2,000 yards and it will penetrate farther in the remote ranges than theirs. Again, ricochet shots, from the thick underbrush and broken ground, undoubtedly favored a certain percentage of lodgment. Many of the officers attributed the lodgment of projectiles to the use of defective ammunition used by the enemy. This point was so susceptible of proof that I instituted experiments to show the relative penetration of the Mauser and Krag-Jorgensen rifles. The tests were made in large blocks of well-seasoned yel'ow pine fired into, across the grain, three feet from the muzzle. The penetration of the Krag-Jorgensen ammunition was 24 inches plus, whilst that of the Mauser ammunition exceeded ours by nearly 10 inches, a demonstration which at once set at rest the idea of lodgment from the defective ammunition of the enemy.

(8) "The old leaden bullet more often leaves fragments of lead in the foyer of fracture." This is so true that it needs no contradiction. The leaden bullet was so soft that it often separated into a number of fragments upon striking resistant bone, whilst the steel-jacketed bullet seldom encounters resistance enough in the human body to disintegrate it.

(9) "As the projectiles of smaller calibre are less apt to lodge or to carry foreign substances into the wounds we will expect to find fewer cases of suffering due to the remote effects of unextracted foreign bodies." This is true of the smaller bullet, as shown in Cuba. There were but few instances where clothing or part of the equipment was carried into the wound.

(10) "The frontage of the jacketed bullet being much less and the fact that it does not lodge as often as the larger leaden bullet will contribute to increase the percentage of recoveries in gunshot wounds of the lungs." That was especially true of the wounded in Cuba. As a rule the wounds of the lungs were apparently so trivial that it was difficult to restrain the men in a recumbent posture.

(11) "Owing to diminished frontage the new bullet will cause less disfigurements in wounds of the face." That is especially true of three officers who received painful wounds of the face. Two of them had never been accused of being possessed of good looks, and strange to say, since their mishap they are much better looking than they were before. On cosmetic grounds the new bullet has some recommendations.

(12) "The projectiles of hard exterior are more humane than the old, resections and amputations will not be so often required hereafter, soldiers will be more often restored to the State useful members of the community instead of cripples and pensioners, and in point of economy, the new projectile confers a great advantage." This last conclusion is also in accordance with the experience in Cuba. There were but three primary amputations and not one of them was done for injury by the small bullet. They were all the result of shell injuries. From the foregoing I believe we should conclude that the work of the experimenters agrees with the conditions found in war, and that their work was not done in vain.

OTITIS MEDIA IN ALL GRAVE DISEASES OF INFANCY.[1]

BY E. H. POMEROY, M.D.,
Chief of Staff, Calumet and Hecla Mining Co.'s Medical and Surgical Service, Calumet, Mich.

I HAVE been forcibly impressed with the statement so frequently made in journals and addresses of late that pediatrics is the specialty of the general practitioner. Probably the overwhelming majority of calls to attend to children will be on account of gastro-

[1] Read at the fifth annual meeting of the Upper Peninsula Medical Society, held at Calumet, Mich., July 6, 1899.

enteric disturbances; but only secondarily at this time is it my intention to bring gastro-enteritis to the attention of this meeting. My idea is that most of the diseases of infancy are more positively, more comprehensibly, more demonstrably infectious from definite bacterial infection than we can easily prove in adults, or if toxemia from bacterial growth, also more definite; and that the pharyngeal postnasal chamber is the more easily comprehensible distributing point for infection to the middle ear, the brain, the lung, the stomach, the intestines; and the middle ear an incubator and generator promoting general toxic disturbance in very many cases of localized infectious diseases.

PONFICK'S TABLE OF ONE HUNDRED CONSECUTIVE AUTOPSIES OF INFANTS, THE FIGURES REFERRING TO OTITIS MEDIA.

	Normal.	Unilateral.	Bilateral.	Normal.	Unilateral.	Bilateral.
NON-INFECTIOUS PROCESSES.						
1. Congenital heart disease	1		1			
2. Extensive burns			1			
3. Non-infectious dermatitis		1	2	1	1	4
INFECTIOUS PROCESSES.						
A. Acute.						
1. Infectious dermatitis	1		3	1		3
2. Diphtheria	3	1	2			
3. Scarlatina			1	3	1	3
4. Pneumonia	1		10			
5. Meningitis (with or without pneumonia)	1		8	1		18
6. Gastro-enteritis, acute	1	2	5			
7. Gastro-enteritis, chronic (with or without pneumonia)	1	5	21	2	7	26
8. Otitis media only		2	6			
9. Otitis media with acute bronchitis			2		2	8
B. Chronic.						
10. Chronic tuberculosis only		1	3			
Chronic tuberculosis with acute generalization (acute miliary tuberculosis)	1	1	10	1	2	13
11. Congenital syphilis			3			3
	9	13	78	9	13	78

There have been a great many contributions to the subject of otology in young children during the past two or three years especially. Probably the one writer whose contributions have attracted the greatest attention and discussion is Ponfick, of Breslau. His principal article on this subject is entitled "The General Pathological Significance of Middle-Ear Diseases in Infancy." It was an address delivered at the Silesian Congress for Natural Culture in June, 1897, and published in the *Berliner klinische Wochenschrift* during the months of September and October following. Ponfick's attention to the subject was drawn by his personal observation of his own children, who had been dangerously ill with gastro-enteritis. The symptoms became alarming in spite of the most careful attention of himself and colleagues and increasingly so until the sudden amelioration, which was simultaneous with a discharge from the ear. The improvement in the gastro-enteric condition continued until there was a cessation of the discharge from the ear, then came a relapse of the gastro-enteric symptoms, very gradual and apparently in connection with some change or faulty preparation of the food. The change for the worse was so gradual and so naturally ascribed to the faulty food that the discharge from the ear was well-nigh forgotten, until it recurred and with it again a pronounced and sudden amelioration of the gastro-enteric symptoms. This happened not only with one child but with two or three in the same family. It impressed Ponfick so much that he, with his associates, observed carefully the condition of the ear in the first subsequent 100 autopsies of children under three years of age. The results of these post-mortems are embodied in what will now be designated Ponfick's table, which contains some most astonishing presentations of facts concerning not only gastro-enteritis but many other conditions in infantile mortality.

These 100 autopsies he has divided under two heads: Non-infectious diseases, and those from infectious processes, and subdividing these into groups according to the disease. In most of these cases the actual condition, or rather the condition of the middle ear, preceding death was not suspected, and the cause of death is given by the attending physician who had charge of the case at the time of the child's death. In only a few of these cases is the history of the case during life obtained. Among the non-infectious group is found a heterogeneous collection, two of congenital heart disease, one of extensive burns, and three of non-infectious dermatitis. Of these only one was found free of otitis. This was a five-and-one-half-months-old infant with a congenital heart disease. Although this would appear to have the least possible connection with otitis, yet the only other case of congenital heart disease in this group was a one-year-old child showing otitis media in both ears and both drums filled with pus.

In Rotch's "Pediatrics" we read that von Tröltsch found on examining 47 petrous bones taken from unselected children that the middle ear was normal in only 18. The other 29 ears showed in varying degrees purulent and sometimes mucous catarrh. Of 15 children with exudation in the middle ear, the youngest was three days and the oldest one year old; five were in their first month, two each in their second and fourth, and the others in their third, seventh, eighth and twelfth month. In every five examinations of the ears of new-born children Schwartze found the tympanum filled with pus in two. Wreden found in 80 ears of children a normal middle ear in only 14. I refer to this here as showing the necessity of examining the ear in all cases of grave disease in very young infants and not confining our attention to an examination in the exanthemata. Referring again to Ponfick's table, we find that the other three dying from non-infectious or traumatic skin disease, and during life wholly without suspicion of otitis, were found to be all cases of otitis and, with one exception, bilateral.

The second group or category, those of infectious processes, embraces 94 per cent. of all the cases collected; and this list is subdivided into (*a*) acute and (*b*) chronic; sub-group (*a*) including all excepting the 16 cases of chronic tuberculosis and the three of congenital syphilis.

In Sub-group 1, of infectious dermatitis, such as erysipelas and furunculosis, there was not one free of otitis, and three of the four were otitis media purulenta bilateralis. In this connection Dr. Edward H. Clarke's statement, which has been largely quoted by other writers on otology, must be referred to. His statement is that the physician who neglects the examination of the ear in the course of the exanthemata of

children should be denominated an unscrupulous practitioner.

In Group 2 of our table are six cases of diphtheria with three absolutely free of otitis. This must be considered either accidental or very astonishing, as diphtheria has been and naturally would be held from its nature and the localization of its symptoms as directly conducive to otitis. To me, however, this showing is comprehensible when we remember the acuteness with which diphtheria manifests its localized symptoms in the throat. I mean by this that the local inflammation is so early and so intense near the pharyngeal end of the Eustachian tube that the Eustachian orifice is closed in many cases before the germs gain entrance into the tympanic cavity.

In Group 3 the one case of scarlatina gave otitis media on both sides. In Group 4, among the 11 cases of uncomplicated pneumonia there was only one, a six-months-old child, in which otitis was absent. In the other 10 cases, ranging in age from two to fifteen months, all showed otitis and in every case purulent and bilateral.

Groups 6 and 7: In these groups there was the greatest difficulty of classification, on account of the tendency to designate differently among different physicians the cause of death in cases where there is a complication of pulmonic and enteric disease. In these two groups as designated, however, we find the great proportion of 35 per cent. of all cases tabulated in this paper. All cases of gastro-enteritis are designated as acute up to the fourteenth day; all in which the duration is beyond that time, as chronic. In the eight cases of acute gastro-enteritis only one was found free of otitis, two were unilateral and five bilateral.

In the chronic enteritis (where the symptoms had persisted more than fourteen days), complicated or not with pneumonia or severe respiratory disease, there were 26 cases and only one of these proved to be free of otitis. Another interesting feature connected with the autopsies of this group was that where the complicating pneumonia was considered most positively the cause of death, the autopsies showed an unexpectedly severe condition of the gastro-intestinal inflammation or a surprisingly slight disease of the lungs, but with one exception all showed otitis media and 21 of the 26 showed this otitis to be bilateral and purulent. In the eight cases where the cause of death was given as uncomplicated otitis media the diagnosis was confirmed by the autopsy. The same was the case in those complicated with acute bronchitis. In only one of the 16 cases of tuberculosis, a ten-months-old boy, was otitis absent. In the other 15 cases there was otitis, some purely mucous and some purulent. In two cases, a two-months-old boy and a boy three and one-half years of age, the otitis was upon one side only. In the other 13, ranging in age from four months to three years, it was upon both sides.

The two subdivisions of Group 10 include chronic pulmonary tuberculosis, four cases, and 12 cases of chronic tuberculosis with acute generalization (acute miliary tuberculosis). The three cases of congenital syphilis were all under four months of age, and the cause of death in each case was considered to be a low constitutional vitality without any special symptomatology beyond this; but in all three of these the otitis was upon both sides and purulent.

In the face of these facts it seems to me we cannot conscientiously attend any grave disease in children without the most careful examination as to the condition of the ear. This is troublesome under the circumstances of light and diet, and ignorance and carelessness, and well-known faultiness of food. It is troublesome to make these examinations, and except as a preparation for better work in the future, it will be for us useless to make them if we do not know enough to recognize disease of the ear drum when the membrane is unruptured; but by conscientious exercise of the technique, one with eyes to see can become expert. In the light of the information presented in this table of Ponfick's, otitis media exists in such an astounding proportion of children's diseases that it is our duty to learn to make these examinations. It is as much our duty to examine the drum membrane as it is our duty to examine a rash upon the skin. Physicians from the time of Hippocrates have looked at people's tongues and learned next to nothing by doing so; and we can certainly learn to look at the tympanic membrane when we have ground for such a hope of saving great numbers of lives.

And now in accepting the responsibility, the unpleasantness, and the discomfort of habitual examinations of the infantile ear in almost every infantile disease, we do not have to be guided by whim or blind empiricism, for we can easily bring to our support substantial, sound, scientific theory, if not absolute conviction. The middle ear is a chamber of most delicate construction, with numerous recesses, processes and angles, lined with the most delicate and absorbent of tissues, its walls rich in a network of nerves, blood-vessels and lymph channels, more intimately connected with the central nervous system than any other extra-cranial portion of the body, and in easily comprehensible connection with the gastro-intestinal and respiratory systems. It is easy for us to understand how this chamber can become infected through the Eustachian tube, easy to understand how, once infected, an inflammation can be excited which will close this Eustachian tube. The infection once established, this chamber is readily turned into an incubator for bacterial growth and a generator for the production of bacterial toxins. The natural process of infant feeding, especially the most natural, the mother's breast feeding, the sucking, causes the greatest possible tendency to the paroxysmal opening of the Eustachian tube, through which bacteria may be expelled into the postnasopharyngeal space and with the next breath to be taken into the lungs or with the next swallow to be taken into the stomach. The middle ear being affected and the exit being prohibited or impeded, we have the production of bacterial toxins in a place where they can be readily absorbed into the general circulation, a general toxemia be produced, influencing any concurrent or accidental ailment in any other portion of the infant's body. This all seems to me so reasonable, so absolutely incontrovertible, and so substantiated by actual facts, that I insist it is our duty as general practitioners, as specialists in pediatrics, to give this matter our daily and most conscientious attention. I will cite but a few cases to show the varied conditions in which we in Calumet have found these observations to be worthy of the trouble of making, but I would assure you that in no case have we regretted the time or the trouble given to them.

These cases are selected on account of the varying conditions. The number can doubtless be multiplied in the practice of any busy general practitioner.

CASE I. A. K., male, age five months. First day: Temperature, 99.8°; pulse, 100. Frequent vomiting: watery diarrhea which had been gradually increasing for past two weeks. Baby bottle-fed from six weeks of age. Condition apparently not grave and ascribed to faulty preparation of food and irregular feeding. Treatment principally correction of diet. Second day: Condition unchanged. No apparent tenderness about the ears, but careful examination of the tympana not made. Further effort made to correct errors in diet. Colon irrigated with water at 70°; bismuth every hour. Third day: Convulsions and death. During life no examination of the tympana of this child was made and the general appearance of the child had not been such as to excite any grave apprehensions. After death, with my associate, Dr. A. B. Mills, I examined the ears. The left tympanum was found tense, and on puncturing clear fluid was liberated. The right tympanum was tense and bulging, and on puncture thick pus poured out. The impression this post-mortem examination made upon my mind was that if these ears had been punctured a day earlier the child would have recovered promptly.

CASE II. G. M., male, age nine weeks, was brought to the Calumet Hospital with history of having been crying continually for fifteen days excepting only when drugged with gin or soothing syrup. Temperature normal, pulse almost imperceptible, bowels constipated. The ears were examined by five physicians, including myself, and we were unable to discover any abnormality in color of the drum membrane, and a bulging in the left tympanum was so slight as to leave doubt of the tympanum being distended with any fluid. Puncture, however, was made, three or four drops of pus liberated, and a solution of cocaine ordered to be dropped into the ear. Before the cocaine solution, however, could be brought from an adjacent room the little patient fell into a peaceful sleep. His mother said it was the only natural appearing sleep he had had in fifteen days; that during these past fifteen days when he slept it was with his eyes and mouth open and his features so pinched and drawn that he looked worse than when he was crying. This sleep lasted over two hours, when he awoke, took the breast heartily, and then went to sleep again and did not awake for eight hours, and from that moment has been in perfect health.

CASE III. R. D., female, age seven weeks. Continuous vomiting for three days. Temperature 105°. Coughing and crying frequently, the cough always exciting crying. No tenderness on pressing the palm of the hand against the external ear. Owing to the smallness of the external auditory canal, examination exceedingly difficult. Puncture was made, however, and scarcely more than a drop of pus liberated from each tympanum. Twenty-four hours later the mother described the child as absolutely well, nursing and sleeping naturally. Temperature 98°.

CASE IV. In the service of my associate, Dr. W. K. West. L. T., male, age eighteen months. Bronchopneumonia with diarrhea for two weeks. This is the fourth attack this child has had. Had been weak and sickly most of the time since birth. There were no ear symptoms, but puncture of both membranes was made on account of the physical signs being not extensive enough to account for the evident gravity of the child's condition. Profuse discharge of pus resulted from one ear, a very slight discharge from the other. There was immediate relief to the restlessness and pain of the child, within twenty-four hours complete convalescence was distinctly established, the cure was perfect, and there has been no outward symptom in the child's rapid development since that time, although this was nearly a year and half ago.

CASE V. M. H., female, age five weeks. Nursing. Apparently no pain, but profuse watery diarrhea and rapid emaciation from only three days' illness. Puncture of right tympanum liberated two or three drops of pus and immediate amelioration of the diarrhea followed, although no medicine whatever was given, and no change in diet.

It should be remembered that our earlier teaching has led us to neglect the ear except in cases presenting ear symptoms. Ponfick's presentation of the subject has demonstrated the absolute unreliability of this policy of waiting. While in his 100 cases it was shown that the ear drum had previously ruptured in eight cases, that is, eight ears, 91 per cent. of all the cases examined had shown middle-ear inflammation, and in only 14 of these was the inflammation limited to one ear, and in 77 cases the inflammation was bilateral, representing 154 tympana, making, in addition to the 14 others, 168; that is, spontaneous rupture had occurred in less than nine per cent. of all the cases of otitis. Presumably also nearly all of these cases excepting those in Groups 8 and 9 were without any symptoms of ear disease.

In regard to the technique of this examination, all I can say is that the utmost endeavor should be made to get the best possible light (an artificial light), with the head mirror and an assorted nest of specula, and that the ear of the infant, being different from that of the adult in the shape of the external auditory canal, should be drawn downward and outward instead of backward and upward, and if the external canal be obstructed by dirt, cerumen, or anything else, it should be carefully washed and the effort at examination resumed. Nothing but long-continued practice will suffice to give one a definite idea of the appearance of the tympanic membrane either in health or in disease, but the practice should be persisted in, for there is nothing about it to prevent any practitioner with eyes becoming as expert in this examination as the most cultured aurist. The fact should be reiterated again and again that in very many cases there is no abnormal appearance to the exterior of the tympanic membrane, and yet the middle ear may contain pus and be the source of a toxemia threatening the life of the patient. It is important also to remember that an incision made carefully in the lower posterior quadrant of the tympanic membrane is wholly free of danger and will frequently reveal a case of grave disease and at the same time be the means of almost instant relief. Thorough cleansing of the ear and douching it with sublimate solution should be done before the puncturing, and ether or chloroform anesthesia induced for a thorough examination.

Since reading this paper at the annual meeting of the Upper Peninsula Medical Society, I have read with much interest a valuable article in the *Philadelphia Medical Journal* of August 5, 1899, by Dr. J. S. Meltzer, of New York. It but adds to my conviction, which is more and more confirmed by my increasing experience in practice, that the proper application and appreciation of this contribution of Ponfick's will result in the saving of great numbers of lives and the amelioration of much suffering.

Medical Progress.

RECENT PROGRESS IN GENITO-URINARY SURGERY.

BY F. S. WATSON, M.D., AND PAUL THORNDIKE, M.D., BOSTON.

ANOMALIES OF THE RENAL BLOOD-VESSELS.

M. E. MICHELEAU [1] describes the following anomalies of the renal blood-vessels, which occurred in 16 individuals examined post mortem.

(1) Three renal arteries to the right kidney, the middle one — the largest — entering on a level with the hilus; the others at either end of the kidney directly into the parenchyma. The artery on the left side and the veins of both sides were normal.

(2) The hilus of the left kidney was situated on its anterior aspect. On this side there were two renal arteries, both springing separately from the aorta. One entered the kidney on a level with the hilus, the other, the parenchyma, at the lower pole of the kidney. On the same side there was also a second renal vein, which emptied into the upper part of the iliac vein of that side. The renal artery of the right kidney was normal, but there were two renal veins, one in front and one behind the artery.

(3) One kidney's blood supply normal. The other was supplied by three arteries, springing separately from the aorta. Before reaching the hilus each of the vessels gave off two branches; in the case of the lower one of the arteries these branches passed behind instead of in front of the renal vein.

(4) The right kidney was supplied by two separate arteries. The lower of these two entered the kidney on the level of the hilus; the other, which was given off separately from the aorta, entered the parenchyma at the upper end of the kidney, and did not send off any branches before doing so. Other kidney's arterial supply and the veins of both organs were normal.

(5) A similar condition to the last case, except that the second or supernumerary artery was below instead of above the principal vessel.

(6) On the left side there is a normal renal artery, but from its stem at a short distance from its origin in the aorta a small branch was given off, which passed to the anterior surface of the kidney and entered its parenchyma there. On the right side a similar condition was found, except that the small artery after passing through a portion of the mesentery finally entered by several branches the suprarenal capsule. The veins of both kidneys were normal.

(7) On the right side a single renal artery springs from the aorta opposite the third lumbar vertebra, and divides into two branches before reaching the kidney at the hilus. Two renal veins at the upper end of the hilus, in front a large vein which passes in front of the upper branch of the renal artery and enters into the vena cava just above the point of origin of the renal artery in the aorta. At the lower end of the hilus there are two small venous branches, one from the front of the hilus and one from behind it, which unite in one vein. The vein formed by this union passes at first behind then in front of the renal artery, and enters the vena cava a little below the point of origin in the aorta of the renal artery. On the left side is an artery which springs from the aorta four centimetres below the point of origin of the right renal artery. This vessel divides into two branches before reaching the kidney. At half a centimetre from the point of origin of the main branch in the aorta, a second supernumerary artery is given off from the aorta also. The vessel is small and passes directly to the upper pole of the kidney, where it enters the kidney parenchyma. There is a single renal vein which is formed by two branches which spring from the hilus between the two arterial stems, and after having formed a plexus with the spermatic, it enters by a single trunk the inferior part of the vena cava.

(8) Each kidney is supplied by two arterial trunks, which are given off from the aorta in separate branches, one pair a little above the other. On the right side the upper of the two branches divides before reaching the kidney into two sets of branches, one passing in front of the upper part of the hilus and one behind it, to enter the kidney; between these sets of branches, passes a branch of the renal vein. The lower of the two main vessels passes nearly to the hilus without branching, then divides into three short branches, which enter directly the parenchyma of the kidney at the lower end of the hilus. The single vein is formed by three branches uniting just within the hilus. On the right side the upper of the two main arteries divides near the hilus into three branches; one passes behind, one above and one in front. The lower of the two main vessels divides into two branches, which approach the lower extremity of the hilus; one passes backward and one forward. The single renal vein is formed from a complex venous plexus of small branches of the renal vein and the left spermatic vein placed in front of the arterial branches.

(9) A single renal artery is on the right side and three renal arteries on the left. On the right side the artery is normal, but the vein is peculiar in that it is formed of two sets of branches, one originating from the posterior and one from the anterior aspect of the hilus. These two sets of branches remain distinct nearly to the vena cava; there they unite into one trunk. The left kidney is supplied by three arteries. Of these, the upper two emerge from the aorta by a common trunk, but separate into two branches immediately; the upper, a small one, passes directly to the renal parenchyma of the upper end of the organ. The second, or lower of the two, passes to the parenchyma of the upper half of the kidney, entering it at the anterior aspect of the hilus; it has three collateral branches. The third artery terminates by four branches near the posterior aspect of the lower end of the hilus, one of the four branches passing to the lower extremity of the organ. The vein is normal.

(10) There are three renal arteries on the right side.

RUPTURE OF BLADDER IN A PATIENT WITH STRICTURE.

Michel and Grosse [2] report this case. The patient was fifty-three years old. Gonorrhea, twenty years previously, not treated. For the past two years marked difficulty of urination; ten days previous to entering the hospital complete retention; partial retention for the five following days, small quantities of bloody urine being passed. He then had a sudden pain in the lower part of the abdomen; vomiting followed; symptoms of peritonitis soon occurred. On examination an impas-

[1] Annales des Maladies des Organes Genito-urinaires, August, 1890, p. 879.

[2] Annales des Maladies des Organes Genito-urinaires, September, 1890, p. 970.

sable urethral stricture was found. On the tenth day edema of the lower part of the abdominal wall. Suprapubic cystotomy and drainage. The patient died a few hours later.

Autopsy shows general peritonitis, and a large quantity of bloody urine in the pelvis. On the left lateral aspect of the bladder, below the peritoneal reflection, there was a complete rent of the bladder of the size of a quarter of a dollar. The adjacent peritoneum had been perforated secondarily by the pressure of the gradually increasing quantity of the fluid. The rarity of this accident occurring in connection with stricture is its most interesting feature.

OBSERVATIONS ON THE DETECTION OF SMALL RENAL CALCULI BY THE RÖNTGEN RAYS.

Robert Abbe [3] has collected 27 cases, including two of his own, in which operation verified the presence of stone detected previously by the radiograph.

The term small, used to describe the calculi in the title, is hardly warranted, as will be seen by the following, quoted from another part of the article: "It will be seen from the reports that stones of various sizes *down to one-half inch* in the largest measurement have been unmistakably shown."

The writer notes the importance of certain points in the technique of the radiographic work as follows: "As essential to success are delicate and fresh sensitive plates. The fluoroscope is useless. Rubber tissue should be interposed between patient and the plate to prevent perspiration damping the paper. The photographic plate must be placed well up against the patient's back, including the last four ribs."

With regard to the machine and the tubes, whatever will make a good bone shadow quickly will make a shadow of the calculus. In the radiograph of the normal loin there should be no shadow of the kidney substance, muscles, fascia, intestines, which should resemble in any way the shadow of a renal calculus. Both experimentally and clinically it was shown that shorter exposures than ten minutes or less gave better results than longer exposures. The impression of easily penetrable stones, such as urates, was stronger with very short exposure. A plate while wet may show nothing, but when dry and held in a proper light shows good results. A thin plate showing nothing when looked at in broad daylight may give a good picture when held in front of a brightly illuminated sheet of clean paper. A thin plate will often display shadows when moved rapidly from side to side under proper illumination, though it has shown nothing when held still. A dense plate that seems impenetrable will sometimes show perfect results when illuminated correctly, either by direct or reflected sunlight with a proper screening of the observer's eye. A properly closed box, like a fluoroscope, adapted to the size of the picture, allows a more correct interpretation of shadows. The negative itself will give more information than the photograph.

ANASTOMOSIS BETWEEN BLADDER AND URETER.

Sokoloff,[4] of Moscow, reports 28 cases with one of his own, and describes his procedure most clearly. Two illustrations show method of incision and manner of joining the ureter and bladder. The operation is advocated in cases of ureteral fistulæ.

[3] Annals of Surgery, August, 1899, p. 178.
[4] Deutsche Zeitschrift für Chirurgie, June, 1899, p. 185.

OPERATION FOR ECTOPIA VESICÆ.

Sonnenburg [5] recommends the removal of the bladder and the insertion of the ends of the ureters into penis. He describes his operation, and reports seven cases, with no death. Sonnenburg thinks that plastic operations are well-nigh useless, for, although they can readily be performed, the resulting bladder has no retaining power, and also predisposes to the formation of incrustations which carry pain and danger with them. He advocates (and has done so since 1882) the insertion of ureters into penis, as putting them into the bowels makes a pyelonephritis quite probable.

EXPERIMENTAL STUDIES IN LIGATURE OF RENAL VESSELS.

Alessandri,[6] of Rome, has published a long and carefully prepared article in which he reviews the beginnings of renal surgery, reports many cases and much literature bearing upon his subject, and finally describes with much detail his own experiments upon dogs and cats. His conclusions are briefly as follows:

(1) That ligature of the renal veins is not incompatible with the life and activity of the kidney, but that it offers serious *immediate* danger to life of the animal. If animal lives, a collateral circulation develops sufficiently to re-establish the renal function.

(2) That ligature of the renal artery in the cat does not allow the same restoration of function as in the case of the dog. In the latter there results a good collateral circulation which suffices for the health and proper activity of the organ. In man the presence of many possibly collateral arteries offers a good chance for a similar collateral circulation, in the author's opinion.

(3) That the ligation of all vessels (veins and arteries) is incompatible with life and functions of the organ, but that there is enough collateral circulation in this case to prevent any form of rapid necrosis, and there results a gradual cirrhosis instead.

ARTERIAL CIRCULATION OF THE KIDNEYS; ITS IMPORTANCE IN SURGERY.

Zondek [7] contributes a careful study based upon maceration preparations of 15 kidneys, illustrations of which accompany the article.

RESECTION OF NERVES FOR NEURALGIAS.

M. Rochet [8] reports three cases at the French Association of Urology, where the perineal nerve (perineal branch of internal pudic nerve) was successfully resected for painful urethrocystitis. Relief of patient. Internal pudic nerve was cut down upon where it passes out through small sacrosciatic notch.

Donath and H. Hüttl [9] report a case where six to seven centimetres of the "lumbo-inguinal" and "external spermatic" nerves were removed for neuralgia of testis, which followed an attack of gonorrheal epididymitis. Relief for four months; then recurrence of pain. The nerve was approached through an incision like the one for exploring the ureter.

[5] Deutsche med. Wochenschrift, 1899, No. 14.
[6] Revue de Chirurgie, August and September, 1899.
[7] Das arterielle Gefäss-system der Niere und seine Bedeutung für die Pathologie und Chirurgie der Niere. Archiv für klin. Chirurgie, Band lix, Heft 3
[8] Lancet, October 20, 1899.
[9] Ungarische med. Presse, 1899, No. 11.

CAUSE OF NEPHROLITHIASIS.

Ikawitz[10] discusses six cases of lithiasis, which he says is really a secondary process. He thinks the trouble begins as an "endonephritis" which term he gives to the inflammation of the epithelial lining of glomeruli, tubules, and pelvis of the kidney. He thinks the lithiasis is directly secondary to this "endonephritis."

TORSION OF THE SPERMATIC CORD.

Sasse[11] reports another interesting case, illustrating the results of interrupted circulation in the testicle. A purely clinical article and an interesting one.

ANURIA OF LONG DURATION.

Dunn[12] and Doebbelin[13] report cases of long continuing anuria, the former one of ninety-six hours' and the latter one of eight days' duration. Both were due to calculi. In the former case the patient recovered without operation, while in the latter case the stone was found in the ureter and was pushed down into the bladder, from which it was expelled by the patient during convalescence.

GONORRHEAL PERITONITIS IN CHILD.

There are many recorded cases in children where an ophthalmia due to the gonococcus has been followed by joint involvement. Braquehaye[14] reports a case of gonorrheal peritonitis followed by an arthritis in both ankles.

PROSTATE — CLINICAL NOTES.

Two clinical papers worthy of attention are the following:

(1) Fenwick,[15] "Clinical Notes upon the Rectal Contour and Consistence of a Thousand Prostate Glands."

(2) Wolff,[16] "Ueber die bösartigen Geschwülste der Prostata insbesonders über die Carcinome derselben."

The former tabulates the author's large individual experience with such examinations, and the latter deals in a most careful and complete way with the whole subject and literature of cancer of the prostate.

Reports of Societies.

FIFTH DISTRICT BRANCH OF THE NEW YORK STATE MEDICAL ASSOCIATION.

FIFTEENTH ANNUAL MEETING, HELD IN BROOKLYN, N. Y.

MALIGNANT DISEASE.

THE discussion was opened by the President, DR. JOSEPH D. BRYANT, who spoke first of the exceptional amount of attention which this subject was now receiving from the profession. To a large extent, he said, it had taken the place of tuberculosis as a topic of discussion. In the latter affection a solution of the problem had been reached, but this unfortunately was not the case as regards malignant disease. The subject was still surrounded with gloom and direst apprehension, and he felt convinced that one of the principal causes of this was the hesitancy on the part of the physician as well as the patient and the friends of the latter to recognize the extreme importance of the most prompt operative interference. Whatever light scientific investigation might in the future throw upon the matter of treatment, there could be no doubt that at the present time our only chance of success lay in an early operation in every case possible. The necessity for this was evident when the undoubted rapid increase of malignant disease was taken into consideration.

Dr. Bryant quoted Dr. Park's ominous prophecy that in ten years from now cancer would cause more deaths in New York than pulmonary tuberculosis, small-pox and typhoid fever combined, and said that while this might be considered an extreme view, there could be no question of the increase of this form of disease not only in the United States but throughout the civilized world. He then proceeded to recount the latest available statistics from New York, Boston, Chicago, Philadelphia, San Francisco, Baltimore, New Orleans, London, Paris, Berlin, Vienna, Munich and Hamburg. Having mentioned the conclusion of Newsholme that the increase was not a real but an apparent one, due to more careful diagnosis and more frequent autopsies in recent years, he said that whether this was the case or not there could be no doubt that cancer was one of the most formidable diseases with which we had to contend. The latest statistics showed that it caused 5.06 per cent. of all deaths in persons over forty-five years of age.

What, then, could be done to arrest its progress? The other great scourges of the human family were either now well held in hand or on the eve of coming under control. Billings had directed attention to the fact that in the course of years the parts of the body most frequently attacked by cancer had materially changed. Thus, the digestive organs were now much oftener the seat of the disease than formerly. In males the mouth and throat were very frequently attacked, but this was not so generally the case in females. Inasmuch as in the middle period of life, from the age of forty-five to that of fifty-five, the cases of cancer were more numerous than in all other periods combined, it seemed reasonable to assume that malignant disease did not derive its origin from preceding causes; for surely the first forty-five years of life was the time of greatest activity and exposure. It might, perhaps, be claimed that the *inception* of the disease occurred in earlier life, and that it only became fully developed in the later; but it was impossible for any one who was familiar with the persistent, progressive and aggressive character of cancer to accept the proposition that it could remain latent in the system for any length of time. The age at which the disease commonly occurs would, therefore, seem to present a strong argument against its parasitic origin.

As to the treatment, there could be no question that a prompt and thorough operation was called for in every possible case and it was of the utmost importance that the lymphatic connections of the tumor should be completely removed, whether they were known to be implicated or not. It was, in fact, often

[10] Zur Frage von der Aetiologie, Diagnose und Therapie der Nephrolithiasis. Transactions of the Association of Russian Physicians, Moscow, 1899.

[11] Ein Beitrag zur Kenntniss der Torsion des Samenstranges. Archiv für klin. Chirurgie, Band lix, Heft 3.

[12] St. Paul Medical Journal, December, 1899.

[13] Deutsche Zeitschrift für Chirurgie, July, 1899.

[14] Péritonité blenorrhagique chez une fillette de quatre ans et demi; laparotomie; guérison. Bull. et Mem. Soc. de Chirurgie de Paris, Tome xxiv, p. 736.

[15] British Medical Journal, February 18, 1899.

[16] Deutsche Zeitschrift für Chirurgie, September, 1899.

impossible to state whether the neighboring glands were or were not involved. Manipulation was misleading and unreliable, and it should constantly be borne in mind that these glands always became to some extent affected before they were appreciably enlarged. The surgeon who failed to empty the axilla when excising a cancerous breast was grossly neglectful of his patient's welfare. Gross had found that when the axillary glands were affected, the suprascapular glands were also implicated in over six per cent. of cases. The point which he wished to emphasize was, that the discovery of the existence of a tumor in any part of the human system demanded that the character of the growth should be determined at the earliest possible moment, and that just as soon as the presence of malignant disease was established it should be removed in the most thorough manner. Unfortunately, however, it was too often the case that hesitation and delay characterized everything but the growth of the tumor. Still, great progress had been made since 1870, when Sir William Paget declared that, as far as he was able to ascertain, no permanent recoveries had ever resulted after operation; and already in 1880 Gross had shown that with improved surgical technique the percentage of cures was 9.05. In conclusion, Dr. Bryant quoted the much better results collected by Bull in 1894, and the still more favorable figures given more recently by Halsted and Watson Cheyne. The mortality from the actual operation was now but from two to three per cent.

DR. EDWARD K. DUNHAM read a paper on

THE NATURE OF MALIGNANCY IN NEOPLASMS.

Formerly, he said, hematomata, retention cyst and granulomata had been regarded as neoplasms, and while the essential character of a neoplasm had now been more definitely determined, there was even yet some difference of opinion in regard to the matter. In order to understand the subject clearly it was necessary to study the formation of the various tissues in the development of a new individual. We had (1) cells, and (2) intercellular substances. Cellular activities were of three varieties: (1) nutritive; (2) reproductive, and (3) formative, resulting in differentiation into various tissues. At this point two very important characteristics were developed: (1) specialization, and (2) allegiance to hereditary control. He then proceeded to apply these elements to morbid processes. Inflammation, he said, was one of the results of damage to tissues. The effects of the damage were of four kinds: (1) total destruction; (2) necrosis; (3) degeneration, and (4) irritation. One of the results of irritation was a revival of the processes met with in the normal development of tissues, and a definite purpose was accomplished. As illustrations he mentioned (1) multiplication due to persistence of the damage, as seen in tuberculosis; and (2) deviation resulting from the existing conditions. In the true neoplasmata the tissues did not develop to meet any definite purpose having direct relation to the formation of special tissues. The cells retained their nutritive and formative properties, but not the reproductive, and clinically the growths were known as benign.

In the most malignant tumors, such as sarcoma, we had reproductive activity and nutritive activity, but the normal activity of the tissue cells was almost, if not totally, lost. Rapidity of growth and metabolic activity were characteristic of such tumors. There was a tendency to implicate surrounding tissues. Infiltration and a liability to metastasis were met with. Intermediate between sarcoma and benign tumors there was a considerable number of various kinds of growths. The malignancy they displayed was proportionate to the loss of formative activity in their cells. The view here set forth, Dr. Dunham said, was by no means universally accepted. He then referred to Sanfelice's contention in favor of blastomycetes, and stated that while not prepared to deny that the presence of parasites might possibly divert the cells from their normal allegiance, his own observations led him to doubt that such was the case, He was furthermore convinced that it was impossible to draw a definite line between benign and malignant growths.

DR. L. GRANT BALDWIN read a paper on

MALIGNANCY IN THE FEMALE GENITO-URINARY SYSTEM.

He said that out of 3,787 gynecological cases of which he had records, there were 60 showing some form of malignant disease. There were two cases of cancer of the bladder and urethra, three of cancer of the ovaries (in one of which only a single ovary was affected), and 55 cases of cancer of the uterus. In 17 of the latter hysterectomy was performed, and four of the patients were in good health to-day. Fifty-six of the 60 women were married, and with but a single exception all had been pregnant one or more times. Procreation would, therefore, seem to be a powerful predisposing cause of malignant disease. Out of the 50 women suffering from cancer of the uterus, only one had never been married or pregnant. Laceration of the cervix was beyond dispute a very frequent factor in the causation.

In his experience the prognosis was very bad. The fault was largely that of the family physician and the patients themselves. In nearly all his cases when the patient was first brought to him the disease had already existed from six months to two years; while in such an affection as this, our only hope lay in early and complete removal. There was, unfortunately, a widespread misapprehension in regard to the subject on the part, not only of the public, but of medical practitioners. It had long been a prevalent idea that profuse and prolonged uterine hemorrhage was a natural circumstance at the time of the menopause. The occurrence of hemorrhage, however, whether at the menopause or any other time, was the one thing of all others which should call for a prompt and thorough physical examination. The fact of the absence of pain was misleading; for in cancer of the uterus pain was by no means an important sign. As to loss of flesh, this, like the pain, was apt not to occur until late in the disease, after metastatic changes and systemic infection had taken place. The presence or absence of odor was also an unreliable sign, and the cancerous cachexia, on which so much stress had been laid, came at a period when it was generally too late for the surgeon to be of any material service to the patient. A thin watery discharge from the vagina sometimes preceded the occurrence of hemorrhage, and the appearance of this should always excite suspicion. The continuance of menstruation, even if the flow was not profuse, beyond the normal time for the menopause should also arouse suspicion.

In regard to the subject of treatment he would only say that in uterine cancer an early and complete removal, preferably by vaginal hysterectomy, was by all

means advisable. As to the matter of technique, if we could do away entirely with sutures and ligatures it would be a great step in advance, and the use of clamps or forceps was therefore to be preferred. The author especially commended Dr. J. S. White's instrument, and also spoke favorably of Skene's electric hemostatic forceps.

DR. JONATHAN WRIGHT read a paper on

MALIGNANT DISEASE OF THE NOSE AND THROAT.

He said that as regards the nose there appeared to be a few exceptional cases in which the patient recovered without the removal of the growth by operation. Whether these were only apparent exceptions, and due to errors in microscopic examination, he was unable to say. The conditions met with in the nose presented a very different clinical picture from those of the larynx. There were very few cases of pure adenoma in the nose, adenoma being more often combined with carcinoma or epithelioma, and sometimes with sarcoma. These neoplasms were usually of slow growth, and would seem to be favorable for operation, but, so far as his experience went, they were apt to occur in very old persons, and the difficulties of operation were often very great. Clinically there was very little difference between adenosarcoma and adenocarcinoma. Sometimes the granulomata of syphilis strikingly resembled round-cell sarcoma, the most malignant of tumors. In doubtful cases it was always well to bear in mind the possibility of syphilis, and to subject the patient to a course of iodide of potassium by way of test. As to "clinical sense," so much relied upon by some, the greatest watchfulness should be maintained lest it should lead the observer into error.

In malignant disease of the fauces there were fewer cases in which the diagnosis was for any length of time attended with doubt, although it was sometimes difficult or impossible to secure a fragment of the growth for microscopical examination. Sarcoma of the tonsil was not a very rare form of trouble, and sometimes it was quite difficult to make the diagnosis between this and simple or syphilitic hypertrophy, although the latter was rare. The consideration of malignant disease of the larynx had to be omitted on account of lack of time.

DR. MAX EINHORN read a paper on

THE EARLY RECOGNITION AND MANAGEMENT OF MALIGNANT DISEASE IN THE DIGESTIVE SYSTEM.

The achievements of modern surgery, he said, showed that cancer is primarily a localized, and not a systemic, disease. Judging from analogy, malignant tumors, if discovered early enough, were just as successfully removed from the digestive tract as elsewhere, and it should therefore be the aim of the clinician to perfect his diagnostic ability with regard to this form of disease. The stomach tube in conjunction with the chemical analysis of the gastric contents had marked a decided advance in this direction, and transillumination of the stomach might also, in favorable instances, be of some service; but still our methods were as yet comparatively crude, and as a rule afforded a recognition of the malignant affection only at a stage when it had already progressed to a considerable extent. In speaking on the subject of etiology he said that one factor which, although it was not directly concerned in the origin of cancerous tumors, created a decided predisposition for their development was repeated irritation. Hence, those parts along the digestive tract which were subjected to the most marked mechanical irritations were also most often the seats of malignant disease. Thus, the stomach, receiving the food in a comparatively coarse state, was the organ most frequently attacked, and here, again, the cardia, and especially the pylorus, were chiefly involved. The small intestine, through which the chyme passed in its greater part in liquid form, was very seldom attacked with cancerous disease, while the larger intestine, in which the fecal matter assumed a more solid consistency, showed a comparatively large percentage of cases of this kind.

Dr. Einhorn described the conditions under which the diagnosis of cancer of the different parts of the digestive apparatus was justifiable, as follows:

I. *Œsophagus and cardia.*— Gradually developing dysphagia and the presence of a stricture in the œsophagus, especially if a particle of tumor showing the characteristics of cancer has been brought up with the tube, or the presence of the above symptoms in connection with frequent small hemorrhages.

II. *Stomach and pylorus.*— A positive diagnosis of cancer may be made if the following conditions are noted: (1) If particles of tumor are found (in the wash-water or tube) which show the microscopic characteristics of a malignant growth; (2) the presence of a more or less large tumor with an uneven surface, belonging to the stomach and associated with dyspeptic symptoms; (3) the presence of a tumor associated with frequent hematemesis; (4) constant pains, frequent vomiting, ischochymia, emaciation — all these symptoms being constant and not extending over too long a period (six months to one year); (5) tumor and ischochymia; (6) emaciation, ischochymia, presence of lactic acid; (7) constant anorexia and pains, not yielding to treatment, accompanied by frequent small hemorrhages (of coffee-ground color).

III. *Large and small intestines.*—(1) The detection by abdominal or rectal palpation of a tumor in the large or small bowel, together with symptoms of cachexia and disturbances of defecation; (2) the presence of a tumor, as described, and the discovery in the stools of small particles of a neoplasm with cancerous characteristics; (3) gradually increasing disturbances for a few months in a previously healthy person, accompanied by cachexia and symptoms of a commencing or already developed stricture of the bowels, and the presence in the stool of small particles of growth, giving the microscopic appearances of cancer.

It was a thorough examination of the physical state of the patient, strict attention being paid to all the methods applicable to such cases, and a full knowledge of the history, which enabled us to discover the existence of malignant disease at a comparatively early period. Continued observation and repeated examinations were often of service in arriving at the diagnosis, and sometimes examination under narcosis was desirable. In rare cases in which a probable diagnosis of cancer could be made an exploratory laparotomy, with a view to establishing the diagnosis and performing a radical or palliative operation, would be required.

In the treatment the following points were to be observed: (1) Whenever the tumor is accessible for operation, and there is the slightest hope of curing the patient, a complete extirpation of the growth should be made; (2) if the tumor is not accessible for operation, or the entire removal of the malignant disease

practically impossible, palliative operations which serve to alleviate suffering and prolong life should be undertaken in suitable cases; (3) cases operated upon, as those left without operation, require for their management a skilful physician, who can lessen suffering and nearly always prolong life even under the most trying conditions. The conclusion of the paper was devoted to the special management of malignant disease in the different portions of the digestive tract.

DR. J. W. S. GOULEY made some remarks on

MALIGNANT DISEASE IN THE MALE GENITO-URINARY SYSTEM.

DR. WM. B. COLEY read a paper on

THE TREATMENT OF INOPERABLE MALIGNANT TUMORS.

He differed from the others taking part in the discussion as to the etiology of malignant growths, regarding them as of parasitic origin. The links in the chain of evidence to support this view, he said, were being slowly forged, and but few were now lacking to complete it. Some of the most striking proofs were afforded by Sanfelice's recent experiments on dogs, an account of which he gave. Having stated that seventy-five per cent. of malignant growths were at some time or other beyond the reach of the knife, he referred to Mander's recent work on the ferment treatment. Among the features of the treatment was the lessening of the amount of animal food taken by the patient, butcher's meat being altogether excluded, and the injection of pure ferments. The results from the use of yeast cells were yet too recent to be of value as to the permanent value of the method. The treatment by injection of thyroid extract and the removal of the ovaries had a logical warrant, as the action of the extract was analogous to that of the pure ferments in breaking up glycogen, and he here referred to cases recently reported by Frederick Pye, Watson Cheyne and others.

He spoke briefly of the use of celandine, of electricity, and of the parenchymatous injection of alcohol in the treatment of cancer, and then took up the treatment by means of the mixed toxins of erysipelas and bacillus prodigiosus. The results obtained from this method during the first four years of its employment he had given in a paper before the New York State Medical Association, published in the *Transactions* of the society for 1895. As stated then, the variety of malignant disease that showed the greatest improvement under its use was the spindle-celled sarcoma. After recounting a number of special cases, he said that the cases now amounted in all to 159. Of 87 cases of round-cell sarcoma 39 showed more or less improvement, and in one instance the patient remained entirely well at the expiration of five years. Twenty-two of the cases were of the spindle-celled variety of sarcoma. Of these, eight remained well at the expiration of from three to seven years, and 11 at the expiration of from one to three years. He had already called attention to the very great difficulty both of obtaining suitable cultures and of keeping them sufficiently virulent. These toxins were very powerful bacteriological products, and it was necessary to use them with the greatest caution in order to avoid dangerous risks. Among the conclusions at which he had arrived were the following: That mixed toxins exert an inhibitory action on malignant growths; that these are less efficient in their action on carcinoma than on sarcoma; that in a larger proportion of cases of inoperable sarcoma the patients survived for more than three years after the treatment; that the action of the toxins in no wise resembles that of a local escharotic.

In summing up the discussion, the President, DR. BRYANT, said that (1) there was no question as to the wide prevalence and formidable character of malignant growths; (2) opinion was at present divided as to the exact nature of such growths, whether they were of microbic origin or the result of perverted cell action; and (3) there was no disagreement as to the desirability of an early diagnosis and, when this was made, as to the necessity for prompt operative action in all possible cases.

Recent Literature.

The Nervous System and its Constituent Neurones. By LEWELLYS F. BARKER, M.B. Pp. xxxii, 1,122, with two colored plates and 676 illustrations in the text. New York: D. Appleton & Co. 1899.

When the publishers' announcement calls a book "the most scientific and complete work on the subject ever published, and one of inestimable value to the practitioner and student of medicine," we usually accept the statement with the same amount of credence that we give to the praises of the administration by the pious editor who wants an office, but the announcement of the present volume from which we have just quoted is true. A small portion of the work was published in the *New York Medical Journal* in 1897, but, although it showed that the book would probably be of value, it gave no adequate idea of its real merit. We have had occasion before to regret the lack of English works on the anatomy of the nervous system which could be compared with such works in foreign tongues as those of Dejerine, Van Gehuchten, Ramón y Cajal, Kölliker, Bechterew, Edinger, and others, but that reproach has been done away by the magnificent volume before us. When we read the author's statement in the preface that there has been no attempt to exhaust the bibliography and that only the more important references consulted have been cited, and compare that statement with the number of references actually cited in the foot-notes, the enormous amount of labor involved in the mere study of the literature may be faintly appreciated; but the book is no mere compilation of other men's work. The work of the independent investigator is apparent throughout, and the statements of others are checked and controlled by the judgment of the observer who is familiar with the subject from practical experience.

Not only may the work be put upon an equality with the treatises we have referred to above from its exhaustive and independent character, but it deals with the subject in a wholly new fashion, widening our conceptions of the anatomy of the nervous system, while at the same time it simplifies the intricacies of the subject in a way that no other work with which we are familiar does. We believe it no exaggeration to say that, since Golgi first introduced us to the new conception of the neurone, no work has yet appeared of such importance. Let there be no mistake, however, in the character of the work. It is not a treatise on the gross anatomy of the nervous system. The

student who wishes information as to the position of the ventricles or the variations in the cerebral fissures and sulci, or even the shape and size of the spinal cord, must seek elsewhere. This volume deals with the finer structure of the nervous system, as made up of its constituent neurones, and with their anatomical relations with one another.

The first section deals with the history of the development of the neurone concept, including a careful study of the arguments brought against it by Apáthy and Bethe. The next two sections deal with the external and internal morphology of neurones, especially as manifested by the staining methods of Golgi and Nissl. The fourth section shows the histogenetic relations of the neurones, with a suggestive chapter summing up our present knowledge of the human body as a segmented organism. The fifth section, on the neurone as the unit in physiological and pathological processes, is of absorbing interest and it merits the closest study of every physician as a most suggestive and enlightening presentation of the processes of nervous and mental physiology as interpreted in the light of the neurone theory. These sections, however, occupy only about three hundred pages. The last section, which forms the bulk of the work, is a study of the grouping and chaining together of neurones in a complex nervous system like that of man and higher animals, or, in other words, of the fine anatomy of the nervous system as exhibited in the anatomical relations of the various chains of neurones having a definite physiological function. This study begins with the consideration of the neurones connecting the sense organs of the body with the central nervous system, then of the neurones within the central nervous system connecting the end stations of these first neurones with other portions of the nervous system, then of the motor neurones connecting the central nervous system with the muscles, the neurones connecting with those which throw them under the influence of other centres, and finally the projection, commissural and association neurones of the telencephalon. The adoption of this method of presenting the facts of nervous anatomy and making it the foundation of classification is the most valuable and most original feature of the book. It was of course indicated in the works of Flechsig and Bechterew, and partially adopted by Van Gehuchten, which renders his treatise on anatomy so valuable to the student, but Barker is the first to make this grouping of the neurones the primary and fundamental element in the study of the anatomy of the nervous system. That there are still enormous gaps in our knowledge and that the exact physiological relations of myriads of neurones are still unknown are patent facts, but we believe that this method, defective as it is and must be for years to come, is the simplest, clearest and most rational way to present the facts of nervous anatomy and physiology to the student, and the way in which he can most easily grasp them and retain them as a connected whole. From what has been already said it is perhaps needless to add that, having adopted this admirable method, the presentation of the facts themselves is equally admirable, showing careful research, sound judgment, and a marvellously accurate study of the literature which seems to have overlooked nothing of importance and little that is unimportant. It would be a task even for the Dean of St. Patrick's, who could write entertainly of a broomstick, to be particularly diverting in dealing with the various tracts of fibres in the nervous system, but, with all the other merits of this work, it would be unfair to make no mention of the charm and clearness of its literary style, which, wherever the material will permit, becomes actually entertaining and delightful — even in dealing with the anatomy of the nervous system! The generous collaboration of the publishers, too, must not be overlooked, for the illustrations, profuse in number and often colored, form a valuable and important feature of the work, and the execution of them, as well as the careful typography, deserves the highest praise.

Cyclopedia of the Diseases of Children; Medical and Surgical. The Articles Written especially for the Work by American, British and Canadian Authors. Volume V. Supplement edited by WILLIAM A. EDWARDS, M.D. Illustrated. Pp. xvi, 1,332. Philadelphia: J. B. Lippincott Co. 1899.

This work is not a general text-book, covering the whole subject in a series of complete classified chapters, but a supplement to the well-known cyclopedia of Keating, the last volume of which appeared ten years ago, and is written with the object of rounding out the information obtained in the earlier volumes, and bringing it up to date.

The book is a collection of independent articles, medical, surgical, clinical and pathological, without attempt at classification, covering the important topics in pediatrics, and including many of general scope and interest. It is a product of eighty-seven contributors, eighty of which have written one article each and no one more than three. The list includes a large number of the best English and American writers.

The result is a book of somewhat peculiar quality. The articles are mostly written with the special design of showing the advances that have been made in pediatrics in the last ten years, and recent additions to our knowledge are made very prominent. Many of the writers adhere rigidly to this scheme, and their success shows what might have been done by all. Some chapters have been reprinted from the original with little or no change. Some have been revised by the original contributors, others are by new authors upon subjects treated in the original work. Some chapters are of great excellence, many are only mediocre and add nothing to existing knowledge. The recent bibliography of the subject is given in many instances. We wish to especially mention the following very excellent articles: Ballantyne on Congenital Disorders and Diseases of the New-born; Rotch on Feeding in Infancy; Hare on Advances in Therapeutics; Peffer on Diseases of the Stomach; Barlow on Scurvy; Osler on Cretinism; Musser on Diseases of the Liver; Howard A. Kelly on Diseases of the Ovaries and Tubes; Sachs on Amaurotic Family Idiocy; Snell on Hygiene of the Eye; Cheadle on Rheumatism; Sherman on Tuberculosis of Joints.

We believe that certain articles could well have been omitted as belonging to books dealing with clinical methods or general text-books of surgery. On the other hand, in considering the advances in knowledge of the infectious diseases, we are surprised to find meningitis omitted. Pediatrics is of course closely allied to general medicine, but we cannot help feeling that a few of the articles were written too much from experience with adults.

The illustrations are numerous and well executed. We must draw special attention to those in the articles on Feeding, Bicycling, Cretinism, Hernia, Appendicitis and the X-rays. The book is well printed and bound and the index is clear and complete. All in all, the book is a valuable one, containing much that is new, and no owner of the original cyclopedia will now consider it complete without the addition of the present volume.

A Text-Book of Mental Diseases, with Special Reference to the Pathological Aspects of Insanity. By W. BEVAN LEWIS, L.R.C.P. (Lond.), M.R.C.S. (Eng.), Medical Director, West Riding Asylum, Wakefield. Second edition. Pp. xxvi, 609. Philadelphia: P. Blakiston's Son & Co. 1899.

It is particularly disappointing that such an able and original observer, investigator and writer as Dr. Lewis, who throws so much light on a number of points which his predilections lead him to treat at length, should not go farther and cover the whole ground of mental disease in a sufficiently full, advanced and symmetrical treatise on the whole subject. As it is, in spite of the much-needed additions and changes in the second edition of his text-book, which make it a decided improvement over the first, there is enough lack of system, proportion and completeness remaining to render it unsatisfactory in many particulars. The chapters on Alcoholism, Epileptic Insanity, Progressive Systematized Insanity, and much of that on General Paralysis, for example, are valuable contributions to our knowledge, but a work on insanity which gives in varying amount of detail the etiology of a few varieties and entirely omits it in other and important ones; in which there is no allusion to the rôle of syphilis in general paralysis, or any other form, for that matter; which contains no reference to classification, diagnosis, the method of examining patients, feigned insanity, or confusional insanity, cannot reasonably be expected to properly meet the needs of students, instructors, or practising alienists.

The chapters on Minute Anatomy and on Pathology show, as might be expected, genuine scientific research of the highest order, and before one can safely criticise the author for clinging to his views as to the existence and office of the "scavenger cell" in the face of more recent opinion, he must be sure that other investigators are his equals in close and accurate observation and in sound deductions therefrom.

With all its faults as a text-book, it is nevertheless a highly interesting work, and if in making search for the author's valued views on some special question we are occasionally unsuccessful, we are sure to be beguiled into following some new presentation of another subject, and to profit by his teaching.

The Trained Nurses' Directory. Composed of Names carefully selected by Prominent Physicians and Surgeons of New York and Vicinity from their Private Lists. Compiled and edited by M. LOUISE LONGEWAY, Graduate of the New York Training School, Bellevue Hospital. Sixth edition. 1899.

This small volume of one hundred and thirty pages is designed to furnish a list of nurses who have had an adequate training and are recommended by reputable physicians. After each name is given the line of nursing in which the nurse especially excels, with his or her address. The directory should be of great value to physicians as well as to patients.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, JANUARY 18, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.

THE PHYSICIAN AND THE SURGICAL CONSULTANT.

ASEPSIS and the numerous recent refinements in operative technique have, as is well recognized, vastly broadened the field of surgery, and of legitimate surgery, to the great benefit of humanity. For this extension of the scope of surgical art, we have reason to be and are, no doubt, profoundly grateful, yet on careful review of the situation certain facts are observed which indicate that this expansion has brought with it a certain amount of harm as well as good. It is occasionally desirable and salutary to cease congratulating ourselves on the grandeur of modern progress in our art and to contemplate, for our better guidance and the possible benefit of our patients, some of the pitfalls into which the unwary surgeon and consultant may be led.

In the days when all surgical operations were attended with greater danger and suffering to the patient than they are at the present time, the surgeon was in every act and deed of his profession always under grave responsibility. He was justified in operative interference only under definite and serious indications and after a most thorough and careful diagnosis and consideration of all the conditions surrounding the case. Under such circumstances the men who by force of personality and training were fitted to succeed in the profession of surgery were fewer in number than at present, and the question is worthy of consideration whether they were not, on the whole, men of better judgment.

In these days operative interference is so easy, that mistakes as a rule cost less. A legitimate advantage may be taken of this fact to take greater chances for a possibility of relief in serious conditions, and this advantage is taken daily by conscientious surgeons. There is, however, abundant evidence that this principle is carried too far, and that operations, particularly exploratory laparotomies, are undertaken with more prospect of settling a diagnosis than benefiting the patient, and often before more legitimate means of diag-

nosis, including especially those requiring careful observation of the patient over long periods of time, have been exhausted. "Exploratory laparotomy will settle the question so easily and quickly," says the enthusiastic surgeon, "and may afford a means of cure." It certainly may, but there are so many doubtful abdominal conditions which are benefited by exploratory laparotomy neither in regard to diagnosis nor treatment, that no conscientious surgeon will perform it till every other means of diagnosis has been exhausted. Exploratory laparotomy has its legitimate field, but should be limited to cases in which other methods of diagnosis have been tried, and in which some prospect, however slight, of subsequent advantage is presented.

Another occasional cause of unnecessary surgery is found in a wrong attitude of the surgical consultant toward the family physician. The latter is too apt to call a surgeon to see a case, not to take charge of it, but to operate, he having himself assumed the responsibility of deciding upon operation, and told the patient and his friends that an operation ought to be performed. The surgeon sometimes, it is to be feared, in his anxiety to agree with the physician who called him in consultation, may, even if in his own judgment the case is one in which a waiting policy would be better, delude himself into thinking that the physician has had better opportunities to observe the case, and operate against his own better judgment, with results not always for the best interests of the patient. Certain physicians, it is to be feared, would call a surgeon again in consultation who had done an unnecessary operation to the detriment of their patient rather than one who quietly but firmly refused to operate in contravention of their opinion previously expressed to the patient's friends.

If the profession can only remember that surgery is a specialty and that questions not merely of operative technique but of diagnosis and treatment can be settled rightly only by men of experience in surgery, if they would call a consultant to decide upon operation, instead of taking themselves the responsibility of deciding questions the magnitude of which they do not realize, they would get results better for their patients and themselves, and not encourage the growth of a class of surgeons who are willing to act on the physician's opinion even at the expense of his patient, and incidentally to secure a grip on his consultation practice. This state of things is bad for the welfare of the patient, the art of surgery and the morals of every one concerned, and could be easily put an end to by the consultant's leaving to the surgeon the decision.

"Very true," says the physician, "but I don't want to subject my patient to the expense of a consultation unless the surgeon is going to do something. I can't call a surgeon every time there is merely a *question* of operation — I must decide myself." To such the answer must be made, that if he leaves the matter to his own judgment he will call the surgeon often too late to do any good in cases where his assistance has been urgently needed, as well as summon him at times to operate on cases which would better be let alone. It surely should strengthen the position of a physician in an enlightened community to be beforehand in calling assistance in the settlement of difficult surgical questions, rather than to settle them himself and then call a surgeon who will support him in his mistakes if necessary. Absolute honesty toward his patient's interest is all that is required on the part of the physician and the consulting surgeon.

The taking of responsibilities by members of the profession for which they are not fitted by training and experience is the bane of honest medical and surgical practice, and reacts in harm to the community and the medical profession.

Let responsibility be honestly placed and not wrongfully assumed in the relation of the physician and the consulting surgeon, and good surgery will be promoted at the expense of rash and careless work.

ORIGINAL RESEARCH: A MEANS OR AN END.

It is becoming clear that the medical school of the future, which will most completely fulfil its function as a centre of liberal scientific education, must be associated with a university. This is desirable from many points of view, but particularly because we need in medicine the broadening influence which comes from close contact with other branches of learning. It is to be hoped that as time goes on the bonds between the parent university and its dependent schools may continually become closer, in order that research, so important an element in higher education, may the better be subserved.

In his recent address as President of the American Society of Naturalists, Prof. W. G. Farlow, of Harvard University, has drawn attention to certain facts in the government of our American universities and in their attitude toward research which deserve comment. He finds a decided difference, in the first place, between the government of American universities as compared with that of Germany, and notes the fact that in spite of the circumstance that we are living in a republic, the tendency in our institutions is toward a more autocratic form of government, whereas in Germany it is of a more democratic character. With us the president and various governing boards are the guardians of the policy of the university, while in Germany the members of the instructing body have a far more definite voice in matters of policy and appointment.

The American system has led, indirectly perhaps, but none the less surely, to the subordination of original research to practical ends, rather than to its cultivation for its own sake, a situation which we must accept, however much we may wish for a broader scientific spirit.

Professor Farlow speaks rather feelingly on this matter, as follows: "Fashion and the natural ten-

dency to imitate others has, however, done very much for us in recent years in aid of investigation, for, while it may be next to impossible to induce the governing board of a university to spend money on investigation for its own sake, it is a comparatively easy matter to convince them that they must make provision for original work because some other institution has done so and is thereby attracting public attention. If original research can be used as a means for advertising a university, there is no doubt that it will be encouraged, and, fortunately, as it turns out, it is a very good advertisement, even better than victories in athletics. The really successful American universities are those in which the most original work is done. The trouble is that if one looks upon research mainly as an advertising medium, one is apt to demand quantity rather than quality, and to regard the number of papers published annually as the standard of scientific activity."

Research is unfortunately often expensive, and inasmuch as those from whom the necessary money is to come are apt to consider that research is valuable only in so far as it is "practical," we are apt in this country to meet with discouragement in the prosecution of theoretical lines of work of any considerable magnitude. Professor Farlow is speaking of the university in general, but this all applies with peculiar force to medicine and medical research. Admitting the desirability and necessity of original investigation as a means of progress, it is clear that efforts in that direction should not be hampered by a constant appeal to the practical; immediate results are often not to be expected, should not be demanded, and are of little or less than no value when obtained. We grow weary, at times, of the frequently heard remark that this or that piece of work is useless because its immediate practical utility is not apparent. If we were more thoughtful than we often are, we should realize that it is out of these theoretical investigations, undertaken in a scientific spirit, that practical results of the greatest magnitude finally grow. We are entirely in agreement with Professor Farlow in his opinion that: "The great charm of the German university hitherto has been what has been described as the intellectual atmosphere, the prevailing desire of pursuing learning and investigation for their own sake, which, however, does not unfit the Germans for the successful application of science in industrial and practical fields. We miss in our own universities this universal desire for investigation, which is with us confined to a certain number of persons who are very enthusiastic, to be sure, but are in most cases obliged to justify themselves in the eyes of those who do not understand the value of investigation."

There are abundant signs, however, that we are at least approaching the realization of the attitude which has for many years been characteristic of the German university. This will undoubtedly mark a decided step in advance, and is unquestionably an essential of productive investigation.

MEDICAL NOTES.

FAMINE STATISTICS IN INDIA. — The present generation has seen four famines in India, namely, in 1865–66, when, according to the famine commission, a population of 47,500,000 was affected; in 1868–69, when the area involved a population of 44,500,000; 1876–78, when it affected directly and indirectly 58,000,000 souls, and 1896–97, when fully 81,000,000 were touched by the ravages.

THE STUDY OF TROPICAL DISEASES IN GERMANY. — In the Budget of the German Empire for 1900, according to the *British Medical Journal*, there appears for the first time a subsidy for the Institute of Tropical Hygiene which it is proposed to establish in Hamburg. The empire will contribute £1,025 yearly to the maintenance of the Institute, which is to be opened on October 1, 1900.

PLAGUE UBIQUITOUS. — Several cases of undoubted bubonic plague are reported as having occurred in Manila. The population is, in parts of the city, very dense, and the system of sewerage defective; there is, as yet, however, no evidence of a widespread epidemic. Two cases have also occurred at Adelaide, South Australia.

A TOY HOSPITAL. — There exists at Ealing, a suburb of London, as the caprice of a rich man, a toy hospital, to which broken toys may be sent for treatment, and whence they are later distributed to the children of the poor.

INFLUENZA IN BERLIN. — An epidemic of influenza has broken out in Berlin, with a considerable mortality already reported.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, January 17, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 72, scarlatina 38, measles 92, typhoid fever 10, small-pox 1.

DEATHS IN BOSTON IN 1899. — There were 11,167 deaths in Boston last year, as against 10,886 during the year 1898, but the population increased during the same period from 541,827 to 555,057, so that the annual death-rate is practically the same as for 1898, or 20.12 per 1,000 inhabitants. The total number of deaths from zymotic diseases is 1,444, as against 1,470 in 1899. There was a decrease in the number of deaths from cholera infantum, cerebrospinal meningitis, rheumatism, typhoid fever, cancer, consumption and from old age; there was an increase in the number of deaths from alcoholism, croup, diphtheria, influenza, measles, scarlatina, small-pox, whooping-cough, Bright's disease, bronchitis, heart disease, pneumonia and violence. At the present time there is some little diphtheria and scarlet fever in Boston. The number of deaths reported to the Board of Health for last week is 240, as against 272 the corresponding

week last year, making the death-rate for the week 22.5. In Cambridge and Newton diphtheria has not diminished. In Cambridge last week there were about 35 cases. On one day 11 new cases were reported. In Weston schools have been closed on account of this disease.

SMALL-POX IN A SCHOONER. — A schooner, arriving last week from Brunswick, Ga., brought a case of small-pox in the person of the steward. The members of the crew have been vaccinated and the patient isolated. The case is regarded as a severe one.

SCARLET FEVER IN AUGUSTA, ME. — There have of late been a number of cases of scarlet fever in Augusta, which has led to the enforcement of precautionary measures, with good results.

NO SMALL-POX IN LYNN. — A case of suspected small-pox recently reported from Lynn, Mass., has proved to be chicken-pox.

BEQUEST TO A HOSPITAL. — By the will of the late Miss Lydia M. Palmer, the Cambridge Hospital receives $2,000.

NEW YORK.

TANKERD, THE WIFE MURDERER. — In view of a preliminary report from Drs. Charles L. Dana and C. H. C. Steinsieck, who were appointed to examine into the man's sanity, Governor Roosevelt has granted a respite until July 16th next to Tankerd, the convicted wife murderer. The physicians' report states that while Tankerd was undoubtedly sane at the time of his crime and the verdict was just, he is now demented, and ought not, in their opinion, to be sent to the chair. They believe that in six months' time he will be either permanently and hopelessly demented or restored to about his ordinary health, more likely the former.

VALUE OF THE LIFE OF A CHILD. — Abraham Graham, of Jersey City, on January 9th obtained a verdict of $2,000 for the death of his four-year-old boy, who was killed by a trolley car in 1896. This was the fourth trial of the case. In each of the three previous trials the jury gave the father $5,000, but the Court of Errors and Appeals set the judgment aside as excessive. Justice Gammere, who read the opinion when the verdict was set aside the second time, caused a considerable amount of comment by the statement that the life of a child from a legal or money point of view was not worth a dollar.

COLUMBIA UNIVERSITY. — At the first monthly meeting in the new year of the Board of Trustees of Columbia University, held January 8th, Dr. Ellsworth Eliot, Jr., was appointed clinical lecturer on surgery, and Dr. H. E. Hale, assistant demonstrator of anatomy in the Medical Department. At the meeting the announcement was made that John D. Rockefeller had presented $100,000 to the University for the endowment of a chair of psychology.

MEDICAL ASSOCIATION, CITY OF NEW YORK. — At the annual meeting of the Medical Association of the Greater City of New York, held January 8th, the following officers were elected: President, Dr. R. F. Weir; Vice-President, Dr. William McCollom; Recording Secretary, Dr. P. B. Porter; Corresponding and Statistical Secretary, Dr. F. C. Raynor; Treasurer, Dr. A. D. Ruggles. At this meeting Dr. L. Grant Baldwin, of Brooklyn, read the report of a very rare case of properitoneal (interstitial) hernia in a female.

BEQUEST. — The late Dorman B. Eaton, in addition to bequeathing $100,000 each to Harvard and Columbia Universities, left a large amount to societies and charitable institutions. Among the latter bequests were $10,000 to the New York Skin and Cancer Hospital, and $1,000 to the Burnham Industrial Farm.

APPOINTMENTS. — The Governor has appointed Dr. George Elmer Gorham, of Albany, a manager of the Craig Colony for Epileptics, and Dr. Ernest H. Schwindt, of White Plains, a manager of the New York State Reformatory for Women at Bedford.

ST. JOHN'S HOSPITAL. — The new St. John's Hospital in Long Island City, Borough of Queens, was opened January 7th. The building, which cost about $130,000, is four stories high and will accommodate 200 patients.

PHILADELPHIA.

PREVENTION OF TUBERCULOSIS. — On January 10th the Philadelphia County Medical Society and the Pennsylvania Society for the Prevention of Tuberculosis held a joint meeting. Dr. S. Solis-Cohen presided, and introduced the following speakers: Dr. L. F. Flick, "Plans of the Pennsylvania Society for the Prevention of Tuberculosis"; Dr. J. C. Wilson, "The Necessity of Hospital Care of the Consumptive Poor"; Hon. W. N. Ashman, "Work at Present being done through Private Charity in the Treatment of Consumption"; Dr. Howard S. Anders, "The Necessity for State Aid in the Treatment of Consumption among the Poor"; Rev. Chas. A. Dickey, "The Cost of Maintenance and Management of Hospitals and Sanitaria for Treatment of Consumption"; Dr. Guy Hinsdale, "Localities Suitable for the Treatment of Consumption in Sanitaria throughout Pennsylvania": Dr. E. O. Otis (of Boston), "The Necessity for City Hospitals for the Treatment of Advanced Cases of Consumption among the Poor." After the reading of these papers the subject was discussed by members of the Societies and guests. Dr. J. M. Da Costa in opening the discussion showed that the State must take the matter up if anything is to be accomplished. All that individuals can do is, after all, but a drop of relief in an ocean of woe. The discoveries of Koch have, as a matter of fact, added to the hardship of the individual consumptive. Proved to be a source of danger it becomes the duty of the community to come to his relief and the medical profession should urge this upon the State. Addresses were made by Mayor Wm. H. Lambert, formerly President of the Philadelphia Hospital; Dr. J. Edward Stubbert,

of the Loomis Sanitarium at Liberty, N. Y., and Mr. Wm. B. Hackenberg, of the Jewish Hospital in Philadelphia. Dr. S. Solis-Cohen showed that consumption is to be ranked among the preventable diseases; that the means to prevent it are in the improvement of vital resistance by open air, sunlight, good food, proper alternation of rest and exercise, also by the avoidance of infection by proper care of sputum and by certain measures of disinfection of a public nature. Education of the community regarding these methods is necessary. Massachusetts has taken the lead in the erection of a State hospital for tuberculous patients and it is confidently hoped that other States will soon follow her example.

COLLEGE OF PHYSICIANS. — At the last meeting of the College of Physicians of Philadelphia, Dr. W. W. Keen was elected president, and Dr. Horatio C. Wood, vice-president. Dr. Keen has announced his gift of $5,000 toward the endowment of the library of the College. Mr. Chas. C. Harrison, Provost of the University of Pennsylvania, has subscribed $1,000, and the subscriptions to this fund have reached $30,000. It is generally believed that it was Mr. Harrison who made the Christmas gift to the University of the sum of $250,000 towards the endowment of that institution. The donor's name has not officially been made public. This is the second gift of similar amount received by the University within a few weeks.

THE MEDICAL CLUB. — The Medical Club of Philadelphia has elected the following officers for 1900: President, Dr. James M. Anders; Vice-Presidents, Dr. H. Augustus Wilson and Dr. William L. Rodman; Secretary, Dr. Guy Hinsdale; Treasurer, Dr. F. Savary Pearce. The Club has 290 members.

Miscellany.

STATE CONTROL OF THE INSANE.

THE State Board of Insanity has made a special report to the Legislature recommending State care for the insane of Massachusetts. The text of the recommendations is as follows:

(1) Such legislation as will provide that all insane persons who are now or who may hereafter become public charges shall be supported at the expense of the Commonwealth on and after January 1, 1904. This would involve the transfer from city and town account to that of the State of the cost of maintenance at the same rate of some 5,607 persons.

(2) That all such insane poor shall be committed according to the laws for the commitment of the insane to the custody and control of the authorities of the Commonwealth as soon after January 1, 1904, and in such manner, as may be deemed advisable by the State Board of Insanity.

(3) That all such insane poor shall be cared for in buildings which shall be owned or controlled by the Commonwealth. This would require additional provision. (*a*) For about 500 patients who are inmates of the Boston Insane Hospital; (*b*) for about 900 insane persons who are now cared for in city and town almshouses and private families in care of overseers of the poor.

(4) Such legislation as may be necessary to acquire from the State the land, buildings and equipment in use by the Boston Insane Hospital.

(5) That a colony for the chronic insane should be established according to the general plan outlined in this report.

(6) That the Legislature appropriate a sum not exceeding $25,000, to be expended under the direction of the State Board of Insanity, for the purchase of not less than 2,000 acres of land for such colony.

(7) That the Legislature appropriate a sum not exceeding $50,000, to be expended under the direction of a board of trustees, for the proper organization of such a colony, and toward the construction of buildings and the procuring of other equipment necessary for that purpose.

The propositions submitted to us have been considered in relation to a general plan of progressive development, which, in our judgment, better solves the problem than the erection of new hospitals for the specific purposes suggested.

The system recommended is comprehensive and would take some time and the gradual expenditure of money to complete; and, if perfected, will result in a thorough separation of acute from chronic cases, and, we believe, in the best care of both.

The report is signed by George F. Jelly, Herbert R. Howard, Charles R. Codman, Edward S. Bradford and Francis B. Gardner.

EXAMINATION FOR ASSISTANT SURGEONS IN THE UNITED STATES MARINE-HOSPITAL SERVICE.

A BOARD of officers will be convened at the Service Building, 378 Washington Street, New York City, Wednesday, February 7, 1900, for the purpose of examining candidates for admission to the grade of assistant surgeon in the United States Marine-Hospital Service. Candidates must be between twenty-one and thirty years of age, graduates of a respectable medical college, and must furnish testimonials from respectable persons as to character. The following is the usual order of the examination: (1) Physical; (2) written; (3) oral; (4) clinical. In addition to the physical examination, candidates are required to certify that they believe themselves to be free from any ailment which would disqualify them for service in any climate. The examinations are chiefly in writing, and they begin with a short autobiography of the candidate. The remainder of the written exercise consists in examination on the various branches of medicine, surgery and hygiene. The oral examination includes subjects of preliminary education, history, literature and natural sciences. The clinical examination is conducted at a hospital, and when practicable, candidates are required to perform surgical operations on a cadaver. Successful candidates will be numbered according to their attainments on examination, and will be commissioned in the same order, as vacancies occur. After five years' service, assistant surgeons are entitled to examinations for promotion to the grade of passed assistant surgeon. Promotion to the grade of surgeon is made according to seniority, and after due examination, as vacancies occur in that grade.

Assistant surgeons receive sixteen hundred dollars, passed assistant surgeons two thousand dollars, and surgeons twenty-five hundred dollars a year. When quarters are not provided, commutation at the rate of thirty, forty or fifty dollars a month, according to

grade, is allowed. All grades above that of assistant surgeon receive longevity pay, ten per centum in addition to the regular salary for every five years' service up to forty per centum after twenty years' service. The tenure of office is permanent. Officers travelling under orders are allowed actual expenses. For further information, or for invitation to appear before the Board of Examiners, address Supervising Surgeon-General, United States Marine-Hospital Service, Washington, D. C.

COMPULSORY VACCINATION IN JAPAN.

WHILE in England and America, according to the *Indian Lancet*, the utility of vaccination is still doubted, and the right of public enforcement of it disputed by numerous fanatics, we find that in little Japan, the youngest of civilized nations, not only is vaccination compulsory, but revaccination at stated periods is rigidly enforced. By an act of parliament passed in 1896, and at once signed by the Mikado, revaccination at periods of five years was made compulsory upon every Japanese, whatever his or her station in life. Vaccination is done with lymph from calves only, which is procured from vaccine establishments owned and controlled by the government, and which is distributed gratis. Any attempt to evade revaccination at the stated periods is made a serious offence, and is treated as a grave dereliction against public health. The result is that small-pox, once the curse of the islands constituting the realm of Japan, is now all but unknown. Similar results are reported from every country where vaccination is made compulsory and rigidly enforced. Fortunately for Japan, the era of pseudo-science has not yet reached its shores; we fear however that the time may come when the same endless and useless discussions will prevail there that at present mark so much of our own and especially England's legislation in matters of public health. We trust that day may be long deferred.

INFLUENZA IN LONDON.

THERE has, according to the *British Medical Journal*, been a great increase in the number of cases of influenza in London during the last few weeks, and practitioners in many quarters of the town are extremely busily engaged. The returns of the registrar-general for last week reflect this prevalence of the disease by a serious increase in the number of deaths from influenza in London. The deaths directly attributed to this disease, which had been 38 and 69 in the two preceding weeks, further rose to 193 during the week ending Saturday last, December 30, 1899. Of these 193 fatal cases only 24 were of persons under forty years of age, while 63 were of persons aged between forty and sixty, and 96 were of persons aged above sixty years, of which 30 were of persons aged upwards of eighty years. The deaths referred to diseases of the respiratory organs also showed a marked further increase, and numbered no fewer than 1,172, being more than double the average. The information at disposal is not sufficient to show to what extent influenza is prevailing in other parts of the country, but we hear of wide prevalence, apparently in a rather mild form, in East Anglia.

METEOROLOGICAL RECORD

For the week ending January 6th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.			Relative humidity.		Direction of wind.		Velocity of wind.		We'th'r. *		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S...31	29 87	12	19	5	61	37	49	S.W.	S.	12	9	C.	F.	
M...1	29 50	22	27	16	94	67	80	N.E.	W.	15	15	F.	N.	.56
T...2	29 63	22	30	13	70	56	63	S.W	S.W.	16	12	C.	C.	
W...3	30.12	16	21	10	82	56	69	W.	W.	8	12	C	F.	
T....4	30.52	18	29	8	77	61	69	W.	S.	4	7	C.	C.	
F....5	30.31	34	46	23	66	62	64	S.W.	W.	15	13	O.	O.	
S....6	30.38	36	42	30	75	56	66	W.	N.	12	9	C.	O.	

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☞ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JANUARY 6, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Typhoid fever.	Diphtheria and croup.	Scarlet fever.
New York	3,550,053	—	—	—	—	—	—	—
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	513	153	8.40	20.20	.20	6.20	.80
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	283	76	12.60	22.05	.70	5.95	3.50
Baltimore	506,389	212	51	8.93	16.45	1.41	5.17	.47
Cincinnati	405,000	196	—	7.52	21.28	1.88	1.88	1.88
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	149	49	20.10	20.10	11.39	3.35	.67
Washington	277,000	117	24	21.3	19.85	5.95	1.70	—
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	86	36	13.92	27.84	—	1.16	2.32
Nashville	37,754	41	17	2.44	—	—	2.44	—
Charleston	65,165	35	9	2.86	11.44	—	—	—
Worcester	111,732	42	15	6.76	21.42	—	—	—
Fall River	103,142	—	—	—	—	—	—	—
Cambridge	92,820	32	8	12.52	21.91	—	12.52	—
Lowell	90,114	18	7	—	38.88	—	—	—
New Bedford	70,511	18	7	16.66	22.22	—	—	11.11
Lynn	68,218	—	—	—	—	—	—	—
Somerville	64,394	12	2	8.33	16.66	—	—	—
Lawrence	59,072	—	—	—	—	—	—	—
Springfield	58,266	13	2	7.69	—	—	7.69	—
Holyoke	44,510	8	5	—	—	—	—	—
Brockton	38,759	—	—	—	—	—	—	—
Salem	37,723	12	4	—	33.33	—	—	—
Malden	36,421	14	6	—	35.70	—	—	—
Chelsea	34,235	14	3	14.28	—	7.14	—	—
Haverhill	32,651	17	4	11.76	11.76	—	11.76	—
Gloucester	31,426	2	1	—	—	—	—	—
Fitchburg	30,523	13	4	7.69	15.38	—	—	—
Newton	30,461	7	3	14.28	28.56	—	—	14.28
Taunton	28,527	13	2	7.69	15.38	—	7.69	—
Everett	28,102	4	2	25.00	25.00	—	25.00	—
Quincy	24,578	9	3	11.11	3.33	—	11.11	—
Pittsfield	23,421	—	—	—	—	—	—	—
Waltham	22,791	7	3	—	28.56	—	—	—
North Adams	21,883	6	1	—	16.66	—	—	—
Chicopee	18,316	6	2	—	—	—	—	—
Medford	17,190	1	1	—	—	—	—	—
Newburyport	15,936	3	—	—	—	—	—	—
Melrose	14,721	4	—	—	—	—	—	—

Deaths reported 1,830; under five years of age 504; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas and fevers) 190, acute lung diseases 355, consumption 175, diphtheria and croup 81, typhoid fever 33, scarlet fever 22, diarrheal diseases 6, measles and whooping-cough 7 each, erysipelas 5.

From diarrheal diseases Baltimore and Pittsburg 3 each, Philadelphia, Boston, Cincinnati and Washington 2 each, Providence and Charleston 1 each. From measles Providence 5, Philadel-

phia 2, Baltimore and Chelsea 1 each. From whooping-cough Pittsburg 4, Boston, Providence and New Bedford 1 each. From erysipelas Philadelphia and Worcester 2 each, Providence 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,404,408, for the week ending December 30th, the death-rate was 30.6. Deaths reported 6,700: acute diseases of the respiratory organs (London) 1,172, measles 164, diphtheria 122, whooping-cough 102, fever 52, scarlet fever 37, diarrhea 37, small-pox (Hull) 10.

The death-rates ranged from 17.6 in Huddersfield to 49.7 in Plymouth: Birmingham 25.7, Bradford 22.1, Cardiff 20.2, Gateshead 25.9, Leeds 22.3, Liverpool 36.9, London 35.2, Manchester 22.9, Newcastle-on-Tyne 28.3, Nottingham 34.9, Portsmouth 42 1, Sheffield 25.0, Swansea 27.6.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING JANUARY 13, 1900.

R. W. PLUMMER, assistant surgeon, detached from the "New Orleans" and ordered to the "Petrel" and also to the Cavite Naval Station.

D. G. BERRE, assistant surgeon, detached from the "Bennington" and ordered to the "Petrel."

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING JANUARY 11, 1900.

AUSTIN, H. W., surgeon. To report at Washington, D. C., for special temporary duty. January 6, 1900. To rejoin station at Philadelphia, Pa. January 11, 1900.

WILLIAMS, L. L., surgeon. Granted leave of absence for ten days. January 11, 1900.

VAUGHAN, G. T., passed assistant surgeon. Detailed to represent the Service at the meeting of the National Pure Food and Drug Congress at Washington, D. C., March 7, 1900. January 11, 1900.

GEDDINGS, H. D., passed assistant surgeon. Detailed to represent the Service at the meeting of the National Pure Food and Drug Congress at Washington, D. C., March 7, 1900. January 11, 1900.

ROSENAU, M. J., passed assistant surgeon. Detailed as delegate to the thirteenth session of the International Congress of Medicine to be held in Paris, France, August 2-9, 1900. January 10, 1900. Detailed to represent the Service at the meeting of the National Pure Food and Drug Congress at Washington, D. C , March 7, 1900. January 11, 1899.

PARKER, H. B., assistant surgeon. Granted leave of absence for thirty days. January 8, 1900.

FRICKS, L. D., assistant surgeon. Detailed to represent the Service at the meeting of the National Pure Food and Drug Congress at Washington, D. C., March 7, 1900. January 11, 1900.

BILLINGS, W. C., assistant surgeon. Detailed to represent the Service at the meeting of the National Pure Food and Drug Congress at Washington, D. C , March 7, 1900. January 11, 1900.

RODMAN, J. C., acting assistant surgeon. Granted leave of absence for four days. January 11, 1900.

SOCIETY NOTICES.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. — A regular meeting of the Society will be held at the Medical Library, 19 Boylston Place, on Monday, January 22d, at 8 o'clock.

Dr. Philip C. Knapp will speak briefly on "The Problem of Boston's Insane."

Dr. Henry C. Baldwin will give "A Report of the Work of the Boston Insane Hospital Trustees and Plans for the Development of the Hospital."

ARTHUR K. STONE, M.D., *Secretary*, 637 Boylston Street.

SUFFOLK DISTRICT MEDICAL SOCIETY. — The Section for Obstetrics and Diseases of Women will meet at 19 Boylston Place, Wednesday, January 24, 1900, at 8 P. M.

Papers: Dr. Agnes C. Vietor, "The Question of Supernumerary Fallopian Tubes, with Specimens of Fallopian Tubes with Supernumerary Ostia."

Dr. Charles H. Winn: "Bicornate Uterus with Twin Pregnancy; Abortion from one Horn."

Dr. E. L. Twombly: A Case of Pernicious Vomiting of Pregnancy."

R. A. KINGMAN, M.D., *Chairman*.
C. H. HARE, M.D., *Secretary*.

NEW YORK STATE MEDICAL ASSOCIATION, FIFTH DISTRICT BRANCH. — The sixteenth annual meeting of the Fifth District Branch of the Association will be held in Brooklyn on Tuesday, May 22, 1900. It is proposed to choose diabetes as the topic for discussion. Fellows who are particularly interested in this topic and have any clinical data to present, or theories to offer, will kindly correspond with the undersigned.

J. C. BIERWIRTH, M.D., *President*,
E. H. SQUIBB, M.D., *Secretary*,
P. O. Box 760, Brooklyn.

RECENT DEATHS.

MILTON WILDER HALL, M.D., M.M.S.S., died in Roxbury, January 9, 1900, aged fifty-one years.

JOHN S. COOK, M.D., of Hackettstown, N. J., died on January 1st, in his seventy-fourth year. He was born at Easton, Pa., and was graduated from Union College in 1847 and from the Medical Department of the University of Pennsylvania in 1850. He was elected president of the New Jersey State Medical Society in 1879.

F. H. GEHRING, M.D., a prominent physician at Chateaugay Lake, died recently at Malone, N. Y., from septicemia contracted in performing a surgical operation.

JOSEPH E. ARROWSMITH, M.D., of Keyport, N. J., died January 3d, at the age of seventy-seven years. He was a graduate of the Medical Department of the University of the City of New York, and began practice at Keyport in 1844.

BOOKS AND PAMPHLETS RECEIVED.

A Contribution to the Etiology of Pompholyx. By Martin F. Engman, M.D. Reprint. 1899.

The Tonsils as Portals of Infections. By Emil Mayer, M.D., New York City. Reprint. 1899.

A Review of the History and Literature of Appendicitis. By George M. Edebohls, A.M., M.D., New York. Reprint. 1899.

Disfigurements of Nose and Mouth and their Surgical Treatment. By John B. Roberts, M.D., Philadelphia. Reprint. 1899.

Report of the Trustees of the Rhode Island Hospital, presented to the Corporation at its Thirty-sixth Annual Meeting, November 8, 1899.

Transactions of the American Otological Society, Thirty-second Annual Meeting. Vol. VII, Part II. Published by the Society. 1899.

Progressive Medicine. Edited by Hobart Amory Hare, M.D. Vol. IV, December, 1899. Philadelphia and New York: Lea Brothers & Co. 1899.

Report of the Commissioner of Education for the year 1897-98. Volume I, containing Part I. Washington: Government Printing Office. 1899.

The Modern Treatment of Wounds. By John E. Summers, Jr., M.D., Surgeon-in-chief to the Clarkson Memorial Hospital, etc. Omaha: Medical Publishing Co. 1899.

Medico-Chirurgical Transactions. Published by the Royal Medical and Chirurgical Society of London. Vol. LXXXII. London: Longmans, Green & Co. 1899.

Twentieth Century Practice. Edited by Thomas L. Stedman, M.D., New York City. Vol. XVIII. Syphilis and Leprosy. New York: William Wood & Co. 1899.

Encyclopædia Medica. Under the general editorship of Chalmers Watson, M.B., M.R.C.P.E. Vol. I. Abdomen to Bone. New York: Longmans, Green & Co. 1899.

Transactions of the New Hampshire Medical Society, at the One Hundred and Eighth Anniversary held at Concord, May 25 and 26, 1899. Concord: Ira C. Evans. 1899.

The Other Side of the Antitoxin Question. The Failure of Antitoxin in the Treatment of Diphtheria. By J. Edward Herman, M.D., Brooklyn, N. Y. Reprints. 1899.

Food and Feeding. By Sir Henry Thomson, Bart., F.R.C.S., M.B. (Lond.), etc. With an appendix. Tenth edition. London and New York: Frederick Warne & Co. 1899.

Therapeutic Electricity and Practical Muscle Testing. By W. S. Hedley, M.D., M.R.C.S. (Eng.), in charge of the Electrotherapeutic Department of the London Hospital. Philadelphia: P. Blakiston, Son & Co. 1900.

A Practical Treatise on Medical Diagnosis for Students and Physicians. By John H. Musser, M.D., Professor of Clinical Medicine in the University of Pennsylvania, etc. Third edition, revised and enlarged. Philadelphia and New York: Lea Brothers & Co. 1899.

A Manual of the Diagnosis and Treatment of the Diseases of the Eye. By Edward Jackson, A.M., M.D., Emeritus Professor of Diseases of the Eye in the Philadelphia Polyclinic, etc. With 178 illustrations and two colored plates. Philadelphia: W. B. Saunders. 1900.

Cystitis Produced by Catheterization of the Female Urinary Bladder, and its Prevention. Two Cases of Bilateral Pyosalpinx with Ovarian Cysts; Extensive Adhesions; Celiotomy; Recovery. Ectopic Gestation, with a Report of some Interesting Cases. By J. Murray Johnson, M.D., Bridgeport, Conn. Reprints. 1898-99.

Original Articles.

A RHODE ISLAND PHILOSOPHER (ELISHA BARTLETT).[1]

BY WILLIAM OSLER, M.D.,
Professor of Medicine, Johns Hopkins University, Baltimore, Md.

(Concluded from No. 3, p. 53.)

III.

Bartlett began his career as a medical writer with the *Monthly Journal of Medical Literature and American Medical Students' Gazette*, only three numbers of which were issued. He says in the introductory address, dated October 15, 1831, that there are plenty of practical journals of high character and extensive circulation, but he wishes to see one devoted to "medical history, medical literature, accounts of medical institutions and hospitals, medical biography, including sketches of the character, lives and writings of the chief masters of our art, and of all such as have in any way influenced its destinies and left the deep traces of their labors on its history. . . . To the medical student and the young practitioner, to all those who aspire to any higher acquisitions than the knowledge that calomel purges and salivates, and that tartarized antimony occasions vomiting, who are not willing to rest supinely satisfied in a routine familiarity with doses and symptoms — a familiarity which practice and habit render in the end almost mechanical — we cannot but think these matters must be interesting." And he adds: "The devotion of an occasional hour to such pursuits must have a tendency to enlarge and liberalize the mind. It will help to keep alive and stimulate in the young medical scholar the sometimes flagging energies of study. By calling his attention and directing his desires to high standards of acquisition and excellence, it will urge him on towards their attainment. Delightful and fascinating, in many respects, as the study of his profession may be to him, there are many hours which must be occupied with mental and bodily drudgery. He must make what to others would be loathsomeness pleasure to himself. Amid the wear and tear, the toil and fatigue of such pursuits, he needs at times some intellectual recreation and stimulus, and where can he find one pleasanter or more appropriate than in surveying the career, and studying the characters, of those who have trodden before him the same laborious path, and who have followed it on to its high and bright consummation? If our profession ever vindicates its legitimate claim to the appellation of liberal, it must be cultivated with some other than the single aim of obtaining patients for the sole purpose of getting for services rendered an equivalent in fees."

In the first number there is a statement that on a future occasion the *Journal* will give a "detailed consideration of the character of the old physician of Cos — the venerable father of physic, and of the reform which he effected in medical science," a promise which was not fulfilled to the profession for many years, as Bartlett's well-known lecture on Hippocrates, the last, indeed, of his professional writings, was not issued until 1852. The literature of science, its philosophy, its history, the history of the lives and labors of the founders and cultivators — these he believed it important for the student to cultivate.

[1] An address delivered before the Rhode Island State Medical Society, December 7, 1899.

Among the articles in these three numbers there are some of special merit. One signed S. N., "On the Claims of Medicine to the Character of Certainty," may have suggested to Bartlett his well-known essay, "On the Degree of Certainty in Medicine." The enterprise was not a success, and as Bartlett had said in his introductory address, "of all *weakly* things we most heartily pity weakly periodicals," he had the good sense after three numbers had been issued to give up a publication which the profession did not sustain.

In July, 1832, he became associated with A. L. Pierson and J. B. Flint in a much more pretentious and important journal, the *Medical Magazine*, a monthly publication which continued for three years. It was a very well conducted periodical, with excellent original articles and strongly written editorials. John D. Fisher's original paper on the cephalic brain murmur occurs in Volume II, and in the same one is an excellent paper by E. Hale, Jr., on the typhoid fever of this climate, which is of special interest as containing very accurate statements of the differences between the common New England autumnal fever and the typhus as described by Armstrong and Smith. There are also reports of three autopsies giving an account of ulceration in the small intestine, among the first to be published in this country. There are in addition numerous well-written critical reviews. Among the latter is one of the most virulent productions of that most virulent man, Dr. Charles Caldwell. It is entitled "Medical Language of Literature." I have heard it said in Philadelphia that Dr. Samuel Jackson never forgave the bitterness of the attack in it upon his "Principles of Medicine."

In Volume III there was the interesting announcement that a dollar a page would be paid for all original communications.

In 1831 appeared a little work entitled, "Sketches of the Character and Writings of Eminent Living Surgeons and Physicians of Paris," translated from the French of J. L. H. Peisse. Of the nine lives, those of Dupuytren and Broussais are still of interest to us, and I know of no work in English from which one can get a better insight into the history of medicine in Paris in the early part of this century. One little sentence in the translator's preface is worth quoting: "After making all reasonable allowance for natural tact or talent, and for the facilities and advantages of instruction to be had in extensive medical establishments, it will be found that *study*, intense, untiring, unremitted *study*, is the only foundation of professional worth and distinction."

A great stimulus had been given to the study of phrenology by the visit of Spurzheim to this country. He gave a course of six lectures on the anatomy of the brain and spinal cord at one of the apartments of the Medical College in September of that year, and subsequently a popular course of lectures on phrenology. In 1832 he died in Boston of typhus fever. His brain, it is stated, was in the possession of the Boston Phrenological Society, before which, in January, 1838, Bartlett gave an interesting address on scientific phrenology.

In 1839 Bartlett edited "Paley's Natural Theology," that delightful book, dear especially to those of us who were trained in religious colleges. To some of us at least the freshness of the natural theology, which in Paley's hands was really a delightful commentary on anatomy and physiology, was a happy change from artificial

theology, or even from the "Horæ Paulinæ" of the same author.

Bartlett's claim to remembrance, so far as his medical writings are concerned, rests mainly on his work on "Fevers" issued in 1842, and subsequent editions in the years 1847, 1852 and 1857. It remains one of the most notable of contributions of American physicians to the subject. Between the time of Bartlett's visit to Paris and 1840, a group of students had studied under Louis, and had returned to this country thoroughly familiar with typhoid fever, the prevalent form in the French capital at that time. In another place[5] I have told in detail how largely through their labors the profession learned to recognize the essential differences between the two prevalent forms of fever, typhoid and typhus. The writings on fever chiefly accessible to American readers at that day were the English works of Fordyce, Armstrong, Southwood Smith and Tweedie, in which, as Bartlett says, "they describe a fever or form of fever (that is typhus) rarely met with in this country," and the writings did not actually represent the state of our knowledge upon the subject. Indeed for a number of years later a chaotic condition of mind prevailed among the writers in Great Britain, and it was not until 1849–50 that William Jenner, by a fresh series of accurate observations, brought the British medical opinion into line. As the *British and Foreign Medico-Chirurgical Review*, in a most complimentary notice of Bartlett's work, says, "A history of British fevers such as Louis has furnished to France, or such as given in the volume under discussion, did not exist." Still, even at that date, 1844, the *Review* expressed the ultra-conservative opinion held in England, that the common continued fever, or the low nervous fever of Huxham, was only a mild form of typhus fever. The work is dedicated to his friends, James Jackson, of Boston, and W. W. Gerhard, of Philadelphia; as he states, "a history of two diseases, many points of which they, especially among his own countrymen, have diligently and successfully studied and illustrated."

As to the work itself, the interest to-day rests chiefly with the remarkably accurate picture which is given of typhoid fever — a picture the main outlines of which are as well and firmly drawn as in any work which has appeared since. It is written with great clearness, in logical order, and he shows on every page an accurate acquaintance with the literature of the day, and, as the author of the review already mentioned remarks, a knowledge also of that best of books, the book of nature.

The practical character of Bartlett's mind is indicated by the briefness with which he discusses the favorite topic of the day, namely, the theory of fever. He acknowledged at the outset that the materials for any satisfactory theory of typhoid fever did not exist. He went so far as to claim that the fundamental primary alteration was in the blood, and that the local lesion was really secondary, and he refers to the prevalent theory of fever as "wholly a creation of fancy; the offspring of a false generalization and of a spurious philosophy. What then can its theory be but the shadow of a shade?" This work immediately placed Bartlett in the front rank of American physicians of the day. It had an immense influence on the profession of the country. Among his letters there is an interesting and characteristic one from James Jackson, already referred to in the dedication. Acknowledging the receipt of a copy, he says: "I am now writing to express to you the great satisfaction the book has given me. I think that it entirely answers the end that you proposed. It, in fact, translates to the common reader, in a most clear style and lucid method, the acquisitions which science has made on its subjects within the last few years. Nowhere else can the same comprehensive view of those subjects be found. What may be the conclusions of medical men in regard to essential fevers twenty years hence I would not pretend to say. It is certain their views have changed very much within a shorter period, and if new discoveries are made in ten years to come I doubt not you will be ready to change yours. We must take to-day the truth so far as we know it, and add to it day by day as we learn more."

It is evident from his letters that the success of the work on fevers was a great gratification to Dr. Bartlett. The second edition was issued in 1847, and while the history of typhoid and typhus fever remained much in the same state, with certain additions and developments, the subjects of periodical and yellow fevers were greatly extended. The third edition was issued in 1852. The fourth edition was edited by Bartlett's friend, Alonzo Clark, of New York. The dedication of the second, third and fourth editions was to Dr. John Orne Green, of Lowell, "with whom the early and active part of the writer's life was passed; in a personal friendship which no cloud, for a single moment, ever shadowed or chilled; and in a professional intercourse whose delightful harmony no selfish interest nor personal jealousy ever disturbed."

From every standpoint "Bartlett on Fevers" may be regarded as one of the most successful medical works issued from the medical press, and it richly deserves the comment of the distinguished editor of the fourth edition: "The question may be fairly raised whether any book in our profession illustrates more clearly the beauties of sound reasoning and the advantages of vigorous generalization from carefully selected facts. Certainly no author ever brought to his labor a more high-minded purpose of representing the truth in its simplicity and in its fulness, while few have been possessed of higher gifts to discern, and gracefully to exhibit it."

"An Essay on the Philosophy of Medicine," 1844, a classic in American medical literature, is the most characteristic of Bartlett's works, and the one to which in the future students will turn most often, since it represents one of the most successful attempts to apply the principles of deductive reasoning to medicine, and it moreover illustrates the mental attitude of an acute and thoughtful observer in the middle of the century. The work consists of two parts: in the first science is defined and its canons laid down. Ascertained facts, with their relations to others, obtained by observation or experience, and generalized into laws and principles — this constitutes science. He dwells upon the hurtfulness of theories, and sketches in an interesting manner Newton's position as an observer and as a theorist: "If he (Newton) bowed at any time or in any degree his strong neck to the yoke of hypothesis, it was always with a perfect consciousness of his ability at will to shake it off, as the lion shakes the dew-drop from his mane." He quotes from Sir Humphrey Davy: "When I consider the variety of theories that may be formed on the slender foundation of one

[5] Influence of Louis on American Medicine, Johns Hopkins Hospital Bulletin, August, September, 1897.

or two facts, I am convinced that it is the business of the true philosopher to avoid them altogether."

The five primary propositions with which the second part opens contain the pith of the argument:

Proposition First.— All medical science consists in ascertaining facts, or phenomena, or events; with their relations to other facts, or phenomena, or events; the whole classified and arranged.

Proposition Second.— Each separate class of facts, phenomena, and events, with their relationships, constituting, as far as they go, medical science, can be ascertained in only one way; and that is by observation, or experience. They cannot be deduced, or inferred, from any other class of facts, phenomena, events, or relationships, by any process of induction, or reasoning, independent of observation.

Proposition Third.— An absolute law, or principle, of medical science consists in an absolute and rigorous generalization of some of the facts, phenomena, events, or relationships, by the sum of which the science is constituted. The actual ascertainable laws, or principles, of medical science are, for the most part, not absolute but approximative.

Proposition Fourth.— Medical doctrines, as they are called, are, in most instances, hypothetical explanations, or interpretations, merely, of the ascertained phenomena, and their relationships, of medical science. These explanations consist of certain other assumed and unascertained phenomena and relationships. They do not constitute a legitimate element of medical science. All medical science is absolutely independent of these explanations.

Proposition Fifth.—Diseases, like all other objects of natural history, are susceptible of classification and arrangement. This classification and arrangement will be natural and perfect just in proportion to the number, the importance, and the degree of the similarities and the dissimilarities between the diseases themselves.

Bartlett is the strongest American interpreter of the modern French school of medical observation, which "is characterized by its strict adherence to the study and analysis of morbid phenomena and their relationships; by the accuracy, the positiveness, and the minute detail which it has carried into this study and analysis; and by its rejection as an essential or legitimate element of science of all *a priori* reasoning or speculation. The spirit which animates and guides and moves it is expressed in the saying of Rousseau, 'that all science is in the facts or phenomena of nature and their relationships, and not in the mind of man, which discovers and interprets them.' It is the true *protestant* school of medicine. It either rejects as apocryphal, or holds as of no binding authority, all the traditions of the fathers, unless they are sustained and sanctioned by its own experience."

There are weak points in his arguments, some of which are well pointed out in an able article in the *British and Foreign Medico-Chirurgical Review* (July, 1845), but it is the work of a strong and thoughtful mind, and for a time, at least, it had a powerful influence in the profession. A contemporary writer, S. H. Dickson,[6] speaks of it in the following terms: "It was particularly well-timed, and addressed effectively to the requirements of the profession, at the period of its publication. It breathes a spirit of thoughtful and considerate scepticism, which was then needed to temper the headlong habit of confident polypharmacy prevalent over our country. . . . When addressed, however, by Bartlett, on this side of the Atlantic, and on the other by Forbes, he (the orthodox disciple) stopped to listen and consider. These gifted men spoke with authority; they pleaded impressively, eloquently, wisely. If, in the natural ardor of controversy, they went somewhat too far, let that slight fault be forgiven for the great good they accomplished. Nay, let them be honored for the courage and frankness with which they attacked prevalent error, and risked their popularity and position by assailing modes of practice rendered familiar by custom, and everywhere adopted and trusted to."

In 1848 appeared one of Bartlett's most characteristic works, a little volume of eighty-four pages, entitled, "An Inquiry into the Degree of Certainty of Medicine, and into the Nature and Extent of its Power over Disease." The iconoclastic studies of Louis and certain of the Paris physicians, and the advocacy of expectancy by the leaders of the Vienna school, had between 1830 and 1850 disturbed the profession not a little, and in 1846 appeared an article by Dr. Forbes, in which, as Bartlett said, were drawn "in strong and exaggerated colors the manifold imperfections of medical science and the discouraging uncertainties of medical art." These circumstances had combined to shake and disturb the general confidence in the profession, with the effect that "the hold which medicine has so long had upon the popular mind is loosened; there is a widespread skepticism as to its power of curing diseases, and men are everywhere to be found who deny its pretensions as a science, and reject the benefits and blessings which it proffers them as an art." To Bartlett it appeared high time to speak a clear and earnest word for the science which we study and teach, and for the art which we inculcate and practise, and in this essay he set himself the task of vindicating the claims of medicine to the regard and confidence of mankind. In his endeavor "to show how far and with what measure of certainty and of constancy we are able to control, to mitigate and to remove disease" Bartlett occupied at the outset very advanced ground for that date. We must remember that the general body of the profession had the most implicit confidence in drugs, and polypharmacy was almost as much in vogue as in the seventeenth and eighteenth centuries. The reception of the essay in certain quarters indicates how shocking its tone appeared to some of the staid old conservatives of the day. I came across a review of it in the *Medical Examiner*, November, 1848, from which I give the following extract: "This is a curious production, the like of which we have seldom seen from the pen of any one who had passed the age of a sophomore. What makes it the more remarkable is the circumstance that the writer is a gentleman of education and experience and the author of works which have given him a wide reputation." The force of the rebound sufficiently indicates the intensity with which the attack was felt. Bartlett's position, however, reminds one somewhat of the sermon of the liberal Scotch Presbyterian on "things which cannot be shaken," in which he proceeded at the outset to shake off three-fourths of the cherished beliefs of Evangelical Christianity.

After a preliminary discussion on anatomy and physiology, and on the remarkable rapidity with which these sciences were progressing, he proceeds to speak of the state of pathology and therapeutics as illustrated in the well-known disease pneumonia. Time will not

[6] Gross: American Medical Biography, 1861, p. 750.

permit me to do more than to refer to the result of his analysis of the evidence. He classifies the cases into, first, those which terminate naturally and spontaneously, quite independent of any active medical treatment, a proportion "probably large"; second, a group which will terminate fatally notwithstanding any assistance which art may furnish; they are, as Sir Gilbert Blane said of the worst forms of yellow fever, "determinedly fatal"; and, finally, a third class "not tending necessarily either in one direction or the other," in which the issue depends upon the treatment of the disease. "In theses cases, art, judiciously applied, saves the life of the patient; the issue of the cases, in death or in recovery, is dependent upon the treatment of the disease." Then follows a discussion on the nature and limits of the medical art in the various groups of diseases, and he concludes with a section on the triumphs of preventive medicine.

The initials "A. S." at the end of a review in the *American Journal of the Medical Sciences*, October, 1848, enable us to estimate the impression which the book made upon a kindred spirit. Professor Alfred Stillé, of the University of Pennsylvania (still with us, I am happy to say), wrote, "He has done a good work, a work for which he deserves the respect and gratitude of the medical profession, and of all sound-hearted men, whatever their pursuits, who fight under the banner of truth, and are the sworn foes of all imposture, the determined opponents of all error."

At times and in degrees differing with our temperaments, most of us have bouts of depression, when we feel that the battle has been lost, and that to fight longer is not worth the effort, periods when, amid the weariness, the fever and the fret of daily practice, things have gone against us; we have been misunderstood by patients, our motives have been wrongly interpreted, and smitten perhaps in the house of our friends, the worries of heart to which we doctors are so subject, make us feel bitterly the uncertainties of medicine as a profession, and at times make us despair of its future. In a voice that one may trust Bartlett concludes his inquiry with these memorable words, which I quote, in the hope that they may soothe the heartache of any pessimistic brother: "There is no process which can reckon up the amount of good which the science and art of medicine have conferred upon the human race; there is no moral calculus that can grasp and comprehend the sum of their beneficent operations. Ever since the first dawn of civilization and learning, through

'the dark backward, and abysm of time,'

they have been the true and constant friends of the suffering sons and daughters of men. Through their ministers and disciples, they have cheered the despondings; they have lightened the load of human sorrow; they have dispelled or diminished the gloom of the sick-chamber; they have plucked from the pillow of pain its thorns, and made the hard couch soft with the poppies of delicious rest; they have let in the light of joy upon dark and desolate dwellings; they have rekindled the lamp of hope in the bosom of despair; they have called back the radiance of the lustreless eye and the bloom of the fading cheek; they have sent new vigor through the failing limbs; and, finally, when exhausted in all their other resources, and baffled in their skill — handmaids of philosophy and religion — they have blunted the arrows of death, and rendered less rugged and precipitous the inevitable pathway to the tomb. In the circle of human duties, I do not know of any, short of heroic and perilous daring, or religious martyrdom and self-sacrifice, higher and nobler, than those of the physician. His daily round of labor is crowded with beneficence, and his nightly sleep is broken, that others may have better rest. His whole life is a blessed ministry of consolation and hope."

The last of Bartlett's strictly medical publications was a little monograph on the "History, Diagnosis and Treatment of Edematous Laryngitis," published in Louisville at the time he held the chair of practice at the University, in 1850. It is a carefully prepared monograph, based largely on the studies of Valleix, and to which a fresh interest had been given him by the observations of Dr. Gurdon Buck, of New York, who had cured several cases by directly scarifying the edematous membranes.

IV.

Naturally studious, fond of poetry, history, biography and literature in general, and not for long tied and bound in the chains of general practice, Bartlett had ample opportunities to cultivate his mind. He says in one of his letters to Green (dated Pittsfield, November 1, 1835): "I pass a good deal of my time here quite alone, so that I find myself whiling away the hours in meditation much oftener than when engaged in the more varied and active affairs of business at home. I think that I always leave Pittsfield with the better and purer part of my being somewhat strengthened." Burton concludes his immortal treatise with the advice: "Be not solitary, be not idle," but the true student in some part of his life at least, should know the "fruitful hours of still increase." For many years Bartlett enjoyed a leisure known to-day to few professors of medicine, the fruits of which are manifest in his writings. Among his contemporaries in the profession there were brilliant writers, — Samuel Henry Dickson, Jacob Bigelow, J. K. Mitchell, — but in a style so uniformly high and polished, yet withal so plain, not one of them approached Bartlett. Compare, for example, Samuel Jackson's "Principles of Medicine," written in 1832 with the first edition of the "Fevers" (1842) — the one pompous, involved, obscure; the other clear, direct, simple. For style in his medical writings Bartlett may be called the Watson or the Trousseau of America.

Bartlett was at his best in the occasional address, and, as we have noticed already, this talent was cultivated very early in his career, since we find him giving the Fourth of July oration before his fellow-citizens when he had been scarcely a year in Lowell. All of the lectures and addresses illustrate, as Holmes said, "that easy flow of language, that facility of expression, that florid warmth when occasion offers, which commonly marks the prose of those who are born poets." Among these addresses there are four or five worthy of a permanent place in our literature. Perhaps the most characteristic is one entitled, "The Head and the Heart, or the Relative Importance of Intellectual and Moral Education," which is a stirring plea for a higher tone in social and political morality. In the same clear, ringing accent he speaks in his address on Spurzheim of the dangers of democracy. In a lecture on the "Sense of the Beautiful," delivered in 1843, Bartlett appears as an apostle of culture,

pleading in glowing language for the education of this faculty. One short fragrment I must quote: "Amongst the Hebrews, and in the age of Moses, it was linked to religion; it dwelt amidst the mysteries of Worship and Faith. It brought costly offerings to the costlier altar; it hung the tabernacle with its curtains of fine twined linen, and blue, and purple, and scarlet; and with cherubim of cunning work; it arrayed the high priest of Jehovah in his gorgeous and consecrated garments, and on the mitre of pure gold upon his forehead, it graved, like the engraving of a signet — Holiness to the Lord. At a later day, and amongst a widely different people, it became the handmaid of a refined and luxurious sensuality. It lapped the soul of Greece in a sensual elysium. Its living impersonations were Pericles and Aspasia. It called the mother of love from the froth of the sea, and bound her zone with its cestus; it filled the hills of Arcady with fleet Oreads; it graced with half-naked Naiads the fountains and the rivers. It crowned the Acropolis with the Parthenon, and it embodied its highest conceptions of physical grace and beauty in the Venus and the Apollo. At other periods during the history of our race, it has manifested itself in other forms than these; under other circumstances, aspects and influences, and with other results."

In 1848 he delivered the Fourth of July oration before his old friends in Lowell. At the opening he refers to the fact that twenty years before he had occupied the same position. "It was the dewy morning of my manhood; 'time had not thinned my flowing hair'; life, with its boundless hopes and its golden visions, spread far and fair before me; and cheered by your words of encouragement, and aided by your helping hands,— your associate and co-worker, and in your service; a stranger, but welcomed with frank confidence and trust,— I had just entered upon its arduous and upward pathway."

In 1849 appeared a "Brief Sketch of the Life, Character and Writings of William Charles Wells," the South Carolinian Tory, who subsequently became a distinguished man of science in London, and who was well known for his researches on the phenomena of dew.

One of the last of Bartlett's publications was "A Discourse on the Times, Character and Writings of Hippocrates," delivered as an introductory address before the trustees, faculty and medical class of the College of Physicians and Surgeons, at the opening of the session of 1852–53. The three pictures which he gives of Hippocrates, as a young practitioner in the Isle of Thasos, at the death-bed of Pericles, and as a teacher in the Isle of Cos, are masterpieces worthy of Walter Savage Landor, and I regret that time does not permit me to make quotations. In no words of exaggeration the late George D. Prentice said, "There are but few word pictures in the English language that exceed the grandeur and loveliness of that one called into being by Dr. Bartlett in which he imagines Pericles upon his death-bed with Hippocrates in attendance."

It is remarkable how many physicians write poetry, or what passes as such. I have been told of a period in the history of the Royal College of Physicians of London when every elect (censor), as they were called, had written verses. Some begin young, as did Bartlett; others become attuned in the deep autumnal tone of advancing years, when, as Plato tells us in the *Phaedo*, even Socrates felt a divine impulsion to compose and make verses before quitting the prison house. Those of us who have read the epic of the late distinguished Prof. George B. Wood, of the University of Pennsylvania, entitled "First and Last," published when he was sixty-four, will devoutly hope that professors of medicine, when afflicted with this form of madness, will follow his example and publish their poems anonymously and in another country. Jacob Bigelow, too, when nearly seventy, "darkened sanctities with song" with his American "Rejected Addresses" (Eolopoesis).

Dr. Bartlett had poetical aspirations early in life. In a letter to his sister of December 3, 1826, he speaks of having seen in New York, in the *Garland*, "two fugitive pieces which some months before I had made use of to fill up the corner of a newspaper, but what sense they might have contained had been turned into nonsense, and I blushed for my wandering orphans, notwithstanding they had been so well dressed, and though they had found their way into pretty respectable company. I should have blushed for myself had they been exhibited to the public as my offspring." In another letter of the same period we see how completely he had passed beneath the yoke of Byron.

At the end of December, 1854, Bartlett issued a little volume entitled, "Simple Settings in Verse, for Six Portraits and Pictures from Mr. Dickens's Gallery," the inditing of which had been, as he says, a pleasant occupation which had helped to while away and fill up many a hour which would otherwise have been weary or vacant in his invalid life. I have already spoken of one, "An Allegory," in which are autobiographical details. I cannot do better than to quote the appreciative notice which his friend Oliver Wendell Holmes gave to the little volume. "When, to the friends he had loved, there came a farewell gift, not a last effort of the learning and wisdom they had been taught to expect from him, but a little book with a few songs in it, songs with his whole warm heart in them, they knew that his hour was come, and their tears fell fast as they read the loving thoughts that he had clothed in words of natural beauty and melody. The cluster of evening primroses had opened and the night was close at hand."

Of a warm, affectionate nature,— a manhood fused with female grace,— to judge from the statements of contemporaries and friends, to know Bartlett was to love him. His confrères, John Orne Green and Alonzo Clark, are invariably addressed as "Dear Brother." Among the letters is one of sympathy to Dr. Green, the desire of whose eyes had been taken away at a stroke. In it Bartlett unlocked his heart in a most touching and human appeal to the afflicted soul. It seems almost too sacred to quote, but after listening you will forgive me.

"My Dear Brother: What shall I say to the melancholy allusion, in the close of your letter, to the death of our dear Minerva? What poor words of mine can be of any service to one on whom the hand of the Great Chastener has been so heavily laid? How shall I, whose life has been comparatively so cloudless and serene, come, with the message of solace and encouragement, into the presence of one whose meridian sun has been shrouded in such utter and dreadful eclipse? But why should I not? Am I not a brother and a man? Has not bereavement been a guest in the dwelling of my childhood; has not death been a familiar visitor

amid the scenes of my early friendships and happiness and hopes? And where, too, is the future — for us all — for me, as well as for yourself? We but follow each other through the furnace of affliction, as we follow each other to the grave. Who of us has so hedged in his earthly treasures that the spoiler cannot easily break through the frail enclosure, and rifle him, in a moment, of the choicest and best? The lines of the Christian poet, familiar to me, chiefly, from the lips of a now sainted mother, occur to my memory here:

> 'The spider's most attenuated thread
> Is cord, is cable, to man's tender tie
> On earthly bliss; – it breaks at every breeze.'

We are brothers, then, in all the liabilities and contingencies and uncertainties of the future. Let us be brothers and fellow-helpers, also, in its hopes and its duties. There can be no entire and hopeless wretchedness for the soul of man, except that which arises from its self-inflicted degradation. The sweet sister, the affectionate daughter, the beautiful bride, and the young mother, was taken away in the clear, unclouded morning of her life — taken away, but where? And by whom? The flower was transplanted from an earthly garden — a fair and sunny one, it is true, but from an earthly garden — to be set forever where no worm can feed on its root, where no decay can ever dry up its bloom — in the Paradise of God. By whom? Taken away — by her Father, from a far-off country, where she was only a sojourner or a pilgrim — to her beautiful and eternal home. Take these thoughts into your heart, and they shall lighten up, or drive away, the darkness of the past, and, what is better, they shall again cheer your future with the once familiar forms and faces of Happiness and Hope. How can we know what, even of present good, our indulgent Father may have in store for us? He may have allotted to you many long years, to be filled up first with duty, and, if filled with duty, to be crowned, also, with the cheerful light of social and domestic joy. You may say, perhaps, that this is all very well for me to say, but that I know nothing about it. But I do know something of the mutability of all earthly things. This uncertainty has long been to me a daily theme of meditation; so I am not wholly a stranger. But I have found an antidote to the gloom and sadness which would otherwise occasion in remembering that all things are in the hands of a Wise Disposer, and the surest way to please Him, as well as to secure our own present as well as future peace, is to submit to His dispensations and to follow on in the course of active and cheerful duty to Him, to our fellows and to ourselves."

While at Louisville some obscure nervous trouble, the nature of which I have not been able to ascertain, attacked Dr. Bartlett. Against it in New York he fought bravely but in vain, and after the session of 1853–54 retired to Smithfield, his native place. The prolonged illness terminated in paralysis, but fortunately, did not impair his mental faculties in the slightest. He died on the 19th of July, 1855.

From the many eulogies which appeared after Bartlett's death, I select a portion of one written by his dearest friend, Alonzo Clark, as the preface to the fourth edition of the "Fevers." "Sixteen months ago, he closed his brilliant professional career, after years of growing bodily weakness and pain; his mind not dimmed by his physical infirmities, but bright and comprehensive, glowing with the memories of the past, and the visions of the future. He died too soon for the profession he adorned. The clock had hardly marked twelve at noon, on the dial plate of life, when its pendulum strokes grew faint and gradually fainter to the ear; and now, at length, when all is still, the hand that notes the hours points sadly upward, to indicate how much of daytime still remained to reap the harvest of affection and honor in those fields from which he had already garnered up so many golden sheaves. He died, alas! too soon. The whole profession are his mourners; for conspicuous as he had become by his medical writings and his extended professional labors, his acknowledged worthiness, his innate gentleness and modesty disarmed envy. He left no enemies. His mind and purpose were pure, almost beyond example. His high mental endowments were controlled and directed by a considerate judgment and an earnest, benevolent heart; and as the laws of refraction, wrought out into mathematical formulæ, enable the lapidary to construct the facets which open the fountains of the many-colored diamond, so for him, cultivation and elegant taste had brought out the varied and winning native lights of his rich intellectual, moral and social nature."

In translating the "Lives of Eminent French Physicians," Bartlett said he had a two-fold object: "First, the delineation of distinguished professional character and attainment, and secondly, by the influence of such high examples to awaken in the younger members of the medical body a more devoted and worthy emulation of the great masters of our art." In this spirit I appear before you to-day, glad to tell over the story of your countryman — the story of "a life in civic action warm," one that all "the muses deck't with gifts of grace," a distinguished teacher, an author of widespread influence and distinction, a serene philosopher, but above all a man in whom you may recognize, even from the brief and imperfect sketch which I have given,

> "A likeness to the wise below,
> A kinship with the great of old."

SIXTEEN YEARS' EXPERIENCE IN FOOD AND DRUG INSPECTION.[1]

BY SAMUEL W. ABBOTT, M.D., BOSTON,
Secretary State Board of Health.

THE following brief sketch relates to the work of the State Board of Health of Massachusetts in the line of food and drug inspection for the period beginning with 1883 and extending to the present time.

Several investigations had been made in the early history of the Board relative to this subject,[2] and it was found that a considerable amount of adulteration existed in the various articles used for human food.

A prize of $1,000 had been offered by the National Board of Trade in 1880 for the best essay upon the subject, to be accompanied with a draft of an act, as a guide to the necessary legislation. The prize was awarded to Prof. G. W. Wigner, Secretary of the British Society of Public Analysts, and upon his draft of a bill, the law of Massachusetts was passed substantially as it now stands. Several amendments have been made from time to time as experience has dictated.

[1] Read at the annual meeting of the American Public Health Association, November, 1899.
[2] See reports of 1872, 1873, 1879 and 1882.

For the first year under the operation of this law the time was mainly spent in inspection of the food actually found as offered for sale in the State, an appropriation of $3,000 for this purpose having been made.

The second year a severe attack was made upon the law by persons who feared that its operation might prove a hindrance to the dishonest speculator in impure food, and the war was carried into the Legislature. But the honest farmer and grocer and druggist came to the rescue, and the result was an additional appropriation, making $5,000 for the second year's work. In the third year the same tactics were again tried. Inflammatory circulars were issued by persons desirous of breaking down the bars and appealing to the fears of timid milkmen and druggists. The result was the same as before, and the appropriation was doubled, making it $10,000 instead of $5,000. For the past four years the appropriation has been $11,500 annually. With this amount it is possible to conduct a fair amount of inspection through the whole State. Under the provisions of the law, three-fifths of the annual appropriation must be spent in enforcing the laws relating to milk and milk products.

In addition to the general act of 1882 (which is much the same as that enacted in other States), we have several laws relating to special articles of food, and particularly in regard to milk. Under these acts the Board has collected and examined in these sixteen years of work about 110,000 specimens or samples of food and drugs, and has conducted about 1,400 prosecutions against offenders. The amount of fines turned into the treasuries of towns and counties has been $83,000, the total amount expended in carrying out the provisions of the law having been about $160,000 in the sixteen years. The details of the work are to be found in the annual reports of the Board and are summarized in the following table:

Of the whole number of samples examined, and included in the foregoing summary, 51,198 were samples of milk, 36,524 were other kinds of food, and 9,868 were drugs, patent medicines, cosmetics and other articles of similar character.

One of the results of the early investigations of the Board was the proof that the adulterations in common use were mainly of a commercial and not of a harmful character. The staple articles of food, including the principal cereals, with sugar, and very many other useful and nutritious kinds of food, are almost never adulterated, so that the actual ratio of adulteration is limited to a minor portion of the food supply. The public is often led to believe the contrary by means of alarming and sensational statements in the newspapers, such as have recently appeared, but actual inspection does not confirm these statements. For example, a recent statement circulated throughout the country affirmed that wheat flour was being largely adulterated, and in many instances by injurious substances. A collection of many samples of flour from different parts of the State was made by the inspectors, the result of which showed, on examination, that only five samples consisted of anything but pure wheat flour, and in these instances the addition consisted of a small quantity of corn meal. The value of a food supply of a State, however, is so great as to warrant a continuous watch over its quality, since the few articles which are liable to adulteration are of sufficient consequence and value to require constant

FOOD AND DRUG INSPECTION, MASSACHUSETTS STATE BOARD OF HEALTH (1883-98).

Summary.	Years.							
	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Total examinations of food and drugs	1,298	2,644	4,778	4,326	5,420	5,786	5,454	5,985
Total examinations of good quality	720	1,210	2,751	2,649	3,563	4,019	3,716	4,096
Total examinations not conforming to the statutes	578	1,434	2,027	1,677	1,857	1,747	1,738	1,889
Percentage of adulteration	44.5	54.2	42.7	38.7	34.3	30.3	31.9	31.5
Expense of collection, examination and prosecution	$2,931.56	$5,529.60	$8,557.43	$8,025.34	$8,803.62	$8,915.41	$10,356.28	$10,013.04
Expense of collection, examination and prosecution, per sample	2.26	2.09	1.79	1.85	1.62	1.54	1.89	1.67

FOOD AND DRUG INSPECTION (Concluded).

Summary.	Years.								Totals.
	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	
Total examinations of food and drugs	5,294	6,199	6,409	6,874	7,309	8,357	10,680	10,797	97,590
Total examinations of good quality	3,558	4,111	4,410	4,684	4,496	6,133	8,030	8,076	66,222
Total examinations not conforming to the statutes	1,736	2,088	1,999	2,190	2,813	2,224	2,650	2,721	31,368
Percentage of adulteration,	32.8	33.7	31.2	31.9	38.5	26.6	24.8	25.2	32.1
Expense of collection, examination and prosecution	$10,019.41	$11,180.30	$10,454.11	$10,364.64	$11,375.89	$10,921.61	$12,076.43	$11,062.68	$150,587.35
Expense of collection, examination and prosecution, per sample	1.89	1.80	1.63	1.52	1.56	1.23	1.13	1.02	1.54

supervision to prevent the occurrence of fraud. New and ingenious methods of adulteration frequently make their appearance and demand the exercise of watchfulness on the part of the officials charged with the execution of the law.

The actual cost of the food supply of the population may be determined approximately by observation among different classes of people. The Bureau of Labor Statistics of Massachusetts in an article by Prof. W. O. Atwater, Report of 1886, page 323, states the average cost of the daily ration, by observance of very many dietaries of persons of different occupations, at twenty-five cents. This does not include luxuries, but the common forms of animal and vegetable food necessary for the support of life in a healthy condition.

The daily ration of seventy-five millions of people upon this basis would be worth $18,750,000 and the yearly cost $6,843,750,000. If only one-fourth of this amount represents the value of the articles which are liable to adulteration, the comparatively small sum which the different States annually appropriate for the work of careful inspection constitutes a good investment.

The articles most liable to adulteration are milk, butter, spices, coffee, syrups and molasses, cream of tartar, honey, vinegar, jellies and jams, olive oil, and certain kinds of canned goods.

The milk supply of the State is one of the most valuable constituents of its general food supply. An expenditure of two cents each day per capita for milk amounts to an immense yearly sum when reckoned for the whole population.

In addition to the ordinary methods of milk adulteration, the addition of water, and the abstraction of cream, two other questions frequently present themselves in the course of the milk inspection of large cities and towns — the addition of coloring matter and the use of preservatives.

With reference to the propriety of treating the former of these subjects, the addition of coloring matter, as a distinct form of adulteration, in which the motive for its use is usually a fraudulent one, there can be little doubt; and the officials of the Board have been instructed to use every possible means to suppress the practice.

With reference to the use of preservatives in milk, the present statute does not admit of any discretion, since any such addition constitutes "a foreign substance," under the provisions of Public Statutes, Massachusetts, Chapter 57, Section 5, and the later amendments of the same statutes.

The further question, whether additions of such preservatives as boracic acid, borax, bicarbonate of soda, salicylic acid, formaldehyde or other similar substances in such quantities only as may be required to preserve the milk for a period of twenty-four or forty-eight hours, are injurious to the health of the consumer, does not yet appear to have been definitely settled. The subject has recently been discussed with renewed vigor in the British medical and sanitary journals without arriving at conclusions which may be deemed satisfactory.

If the use of such substances for the preservation of milk is to be permitted, it is plain that some definite quantitative limit should be fixed, an excess of which should be deemed a violation of statute.

In 1897 several amendments to the food acts of the State were made, some of greater and some of less importance, all of which had in view the protection of the general consumer and the prevention of special kinds of adulteration.

The following amendment to the general law of 1882 has had a wholesome effect, since it introduced certain provisions which had not hitherto been embraced in any statute.

Section 3, last paragraph of Chapter 344 of the Act of 1897, reads as follows:

Provided, that the provisions of this act shall not apply to mixtures or compounds recognized as ordinary articles or ingredients of articles of food, if every package sold or offered for sale is distinctly labelled as a mixture or compound *with the name and per cent. of each ingredient therein*, and if such mixtures or compounds are not injurious to health.

The important amendment in the foregoing paragraph consists in the italicized words, which require the name and percentage of each ingredient in a mixture or compound to be distinctly placed upon each package.

The articles to which this applies, as found by the operation of the law during the past two years, are principally coffee preparations, or imitations of coffee, containing chicory and cereal products, spices, syrups, molasses, and baking powders. Several complaints have been made and convictions secured under this provision, and have had a decided effect in securing a better condition of the market so far as the proper labelling of compound articles of food is concerned.

This question of the proper labelling of food products is one of considerable importance, as every one who has had occasion to administer food statutes very well knows. Many of the complaints which have been entered in court in the past few years have rested upon the ground of fraudulent or indistinct or insufficient labels.

The regular routine work of the Board in the department of food comprises the collection of articles of food and drugs from all parts of the State by experienced inspectors and their examination by the analysts of the Board, with the preparation of cases for trial in court. In addition to this routine work, the office is also open daily for the reception of such articles as may be brought in for examination. The articles of this character have not been numerous when compared with those which have been collected by the inspectors, but have represented very nearly all classes of food. The examinations of this class have also extended occasionally to articles not mentioned in the law, but are usually embraced very properly in the laws of other countries among the things which it is deemed proper for sanitary boards to examine, such as cooking utensils and articles intended for the conveyance and storage of drinking-water, wall paper and fabrics used for wearing apparel, children's toys, and other articles in common use among the people.

The articles which were brought to the office for examination during the past year, and were not collected by the inspectors, are included in the following list: Articles of food suspected of containing poisons, milk, spices, coffee, cream, molasses, confectionery, butter, maple syrup, flavoring extracts, flour, honey, diabetic flour, hair dyes, cosmetics and other proprietary medicines, whiskey, wine and cider, wax, wall paper and fabrics to be examined for arsenic, cooking utensils and toys.

The essentials necessary for carrying out a system of food and drug inspection are:

(1) A sufficient annual appropriation.

(2) A well-equipped laboratory, comprising the necessary apparatus and reagents for chemical analysis, and especially for the examination of milk; microscopes for the examination of spices, coffee and other articles requiring ocular inspection. A small weighing-room and a room for polarizing apparatus. It is also convenient to add a closet for photographing purposes, in order to place on permanent record some of the important forms of adulteration.

The officials necessary for the work are:

(1) A general director, who should be made responsible for the careful and thorough execution of the work of the department. All cases intended for prosecution should first be referred to him for consideration, and he should consider all cases of doubtful or disputed analysis. This person may or may not be connected with a health board. In some of the States, as in Ohio and Connecticut, the work is entrusted by law to a single independent commission.

(2) An experienced food chemist or analyst. I use the term analyst as preferable since much of the work of food inspection belongs to the domain of physics or of microscopy rather than to that of chemistry. This official should not only be an expert in his profession, but should have the qualities requisite for testifying with clearness and decision when upon the stand in court, in such terms as an ordinary jury or municipal judge may clearly comprehend. The chemist should receive the samples by number only, all labels, marks, brands or other indications of their sources or places of sale being removed before they are submitted to him.

(3) The collector of samples. The duties of this official are necessarily complex. Primarily, he has authority to travel throughout the States visiting the different cities and towns, and to collect by purchase such articles, under proper supervision, as are most liable to adulteration. He should keep a vigilant eye upon the markets with a view to detecting the appearance of new and unexpected forms of fraud and adulteration, and should at once report any such matters to the general director. While in order to be a good collector it is not necessary that he should in any degree usurp the functions of the analyst or chemist, he should, nevertheless, possess the faculty of keen observation such as is essential to a successful detection, that is to say, he should use his senses, those of sight, smell, taste and feeling, since by the employment of these powers in detecting the gross appearances of articles of food, half the work of food inspection is often accomplished before submitting samples to the chemist. He should also be familiar with the laws relating to food and should possess the requisite knowledge and skill to make complaints at court, to examine witnesses, and prosecute cases before district and municipal judges.

The question will naturally be asked, What advantage is gained by the enactment of food laws and their execution, since enactment alone is of little use without enforcement? The real advantage gained cannot be exactly stated by means of figures representing pecuniary gain. The saving consists not so much in actual money returned to the pockets of the consumer, as in an improvement in the quality of the articles purchased, and in the sense of security which is afforded by a well-executed law.

That those States that have no such system of inspection have an inferior food supply (so far as relates to articles liable to adulteration) is susceptible of proof, since occasional inspections made in those States have shown this to be the case.

There can, therefore, be no reasonable doubt that the system is well worthy of adoption in all communities. It is now in force in almost every large city on the continent of Europe as well as in Great Britain, and commends itself for general adoption everywhere, until the day shall come when man will no longer line his own pockets by defrauding his neighbor.

THE VALUE OF X-RAY EXAMINATIONS IN THE LESS FREQUENT DISEASES OF THE CHEST ILLUSTRATED BY THEIR USE IN THOSE CASES WHERE ANEURISM IS PRESENT OR SUSPECTED.

BY FRANCIS H. WILLIAMS, M.D., BOSTON.

(Concluded from No. 3, p. 57.)

A BUNCH OF ENLARGED GLANDS WHICH GAVE OUTLINES ON THE FLUORESCENT SCREEN SUGGESTIVE OF ANEURISM.

Case VI. (Fig. 4.) Mr. C., forty years of age, referred to me by Dr. Farlow for x-ray examination.

X-ray examination. — Appearances which indicate an aneurism of aorta. There is obstruction to expiration; the lungs are dilated to their fullest extent; the diaphragm is low down in the chest, nearly to the costal border, and moves very little in expiration. No pulsation of the outline is noticed. It is not improbable that the appearances are due to a new growth which obstructs the trachea. This patient was seen by me once and only an examination with the fluoroscope was made. I expected to see him again, get history, and take an x-ray photograph, but did not; and with this incomplete examination I inclined to the diagnosis of aneurism rather than to that of a new growth.

Since the above note in the first paragraph was written, I have seen an article by Dr. Classen in the *Albany Medical Annals*, in which he makes an excellent report of the clinical features of the case, and gives a record of the careful autopsy made by Dr. Lartigau. The patient died on May 10, 1899. No aneurism was found, and the portion of the autopsy record relating to the aorta is as follows:

"*Aorta.*—Shows no apparent dilatation at any point. The circumference of the thoracic aorta is 5.5 centimetres; the circumference of the abdominal aorta is five centimetres. The intima is markedly irregular, the irregularity being due to various-sized areas of elevated fatty atheroma. Behind the trachea at a point on a level with the aortic arch, and situated more to the left of the median line, is a bunch of enlarged glands about the size of a small orange. The individual glands vary in size from a pea to those having a diameter of three centimetres. They are firm in consistency, and are on section deeply pigmented in the central portions, less so in the peripheries, which are apparently congested. The central pigmented portions are black. Now and then on the sectioned gland small pinpoint to pin-head-sized, discrete hemorrhages are apparrent. The individual glands are bound together by old firm bands of connective tissue."

This case is chosen to show how some other disease

may give outlines on the fluorescent screen that simulate those produced by an aneurism, and to emphasize the importance of considering other indications besides the outlines themselves. In this patient the history, the absence of pulsation, and obstruction to expiration on both sides were against a small aneurism. In other patients I have observed this incomplete expiration where there was obstruction of the air passage of one or both lungs.

DIAGNOSIS OF AORTIC ANEURISM BY X-RAY EXAMINATION CONFIRMED BY AUTOPSY.

CASE VII.[3] (Fig. 5.) A man forty-five years old was brought to me for examination, from the Out-Patient Department, by Dr. Arnold, on February 18, 1899, with diagnosis of probable aneurism of the innominate artery and possible aneurism of the aorta.

Family history. — Father died of apoplexy at fifty-five years.

Past history. — "Chancroid" thirty years ago. Alcohol in moderation.

Present illness. — One week ago pain and sense of intense pressure in precordium; pain increased by exertion; some cough and expectoration; slight attacks of hoarseness two or three times in the past few days, but not at present.

Physical examination. — Just above inner end of right clavicle is a marked pulsation, being greater than

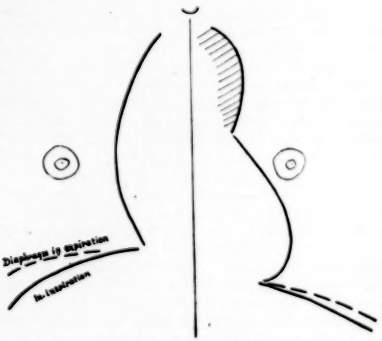


FIG. 4. Case VI. About one-fourth original size.

in corresponding place on left side. At the episternal notch pulsation is greater than normal, felt more distinctly on the right side; there being also a thrust from the right instead of from below upwards. Above the inner end of right clavicle, just outside of the sternomastoid muscle, a thrill is felt. There is a slight but distinct tracheal tug. Left radial pulse delayed. Cardiac apex beat in sixth interspace in mammary line. Over aortic area are systolic and diastolic murmurs transmitted along course of aorta and innominate artery, and heard distinctly over inner end of right clavicle. Systolic murmur is carried to the left subclavian and carotid arteries, but not the diastolic. Slight systolic murmur at apex.

The x-ray examination made February 18th revealed a small aneurism of the descending portion of the aortic arch, which gave no physical signs even after the x-ray examination.

On February 23d, the patient was found on the street unconscious, was brought into my service at the hospital, and a few moments later died. No cause of death was discovered by Dr. Pearce at the post-mortem, but the autopsy showed a small aneurism of the descending portion of the aortic arch corresponding to the outline drawn at the x-ray examination, likewise an aneurismal dilatation of the innominate artery.

It will be seen by comparing the x-ray lines with the dotted lines, which represent the outlines found by percussion, that we failed to recognize any dulness over the site of the aneurism, and even after I had *seen* its outline on the fluorescent screen we could not detect it by percussion. Further, by following the dotted line which indicates the left border of the heart as found by percussion, we see that it is incorrect, when compared

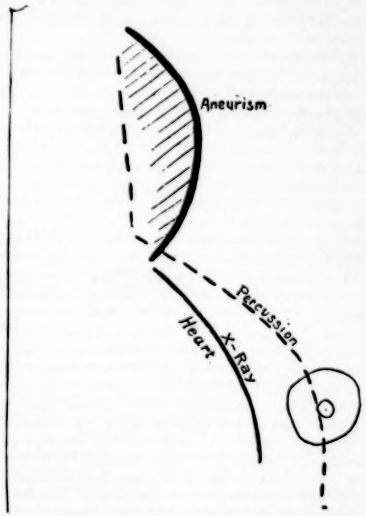


FIG. 5. Case VII. One-third original size.

with the same border as determined by the fluoroscope and at the autopsy. In cardiac disease I have frequently demonstrated a discrepancy between the position of the borders of the heart as suggested by percussion and as determined by means of the fluorescent screen.

A further point of interest in this patient is that the lungs were found to be normal both by the x-ray and post-mortem examinations.

ANEURISM UNSUSPECTED BY PHYSICAL EXAMINATION.

CASE VIII. J. McC., a man, forty years old, referred to me from the Out-Patient Department by Dr. Arnold, illustrates some cases of the class in which aneurism could not be made out on physical examination, and was discovered in the x-ray examination made to determine the size of the heart.

[3] This case was cited by me in the Boston Medical and Surgical Journal, May 18, 1899.

History.— Syphilis eleven years ago; rheumatism six years ago; alcohol habitually.

Present illness.— Marked dyspnea on exertion and at times vertigo; very nervous and sleeps poorly; pain at times in the left shoulder and breast; visible pulsation of all large arteries; capillary pulse; heart dulness begins below third rib and extends two centimetres to right of sternum; apex in sixth interspace, three centimetres outside nipple line; double murmurs over aortic area; similar murmurs at apex, which are transmitted toward axilla; diastolic murmur heard over epigastrium, and systolic over large areas in back; diffuse visible pulsation over cardiac area.

X-ray examination revealed with unusual clearness a small aneurism of the descending arch of the aorta, and its pulsations were easily seen. Two examinations were made, with an interval of three weeks between them, and the outline of the aneurism was readily observed; most clearly when the fluorescent

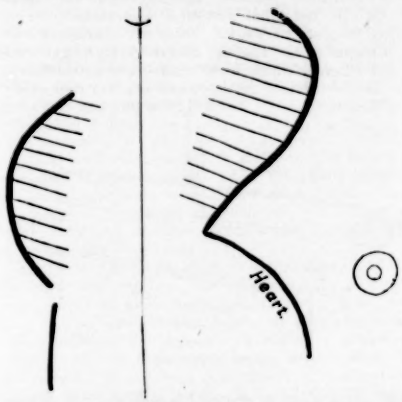


FIG. 6. Case IX.

screen was placed over the upper part of the left scapula. Dr. Bartol kindly brought the patient to me on April 15 and June 3, 1899. We found no change from the previous x-ray examination.

ANEURISM UNRECOGNIZED BY AUSCULTATION AND PERCUSSION SEEN BY AN X-RAY EXAMINATION.

CASE IX. (Fig. 6.) E. D., a neurasthenic woman, forty-two years old, referred to me from the Nervous Out-Patient Department of the Boston City Hospital by Dr. Knapp, after the Throat Department had reported to him complete paralysis of the left recurrent laryngeal nerve. It is interesting to note that the hoarseness, which led to suspicion of aneurism, had made no impression on the patient, because she had been somewhat hoarse since early school-days. Patient has suffered from nervousness for three years; lately easily tired, emotional and depressed. Hoarseness has increased since she has become emotional. Some dyspnea recently.

Physical examination.— Auscultation and percussion gave no signs of aneurism.

X-ray examination revealed a small aneurism of the aortic arch.

ANEURISM RECOGNIZED ONLY BY AN X-RAY EXAMINATION.

CASE X. (Fig. 7.) A. B., referred to Dr. Leland for esophageal stricture, and sent by him to me for an x-ray examination.

History.— In twenty-two years of married life her only pregnancy resulted in miscarriage. Patient was said to have a stricture about an inch below the upper end of the esophagus and another about opposite the second rib. During the past summer her family physician had passed an esophageal bougie every third day. Shortly before coming to me this treatment had been omitted and she felt no worse.

Physical examination gave no sign of thoracic aneurism.

X-ray examination revealed a small aneurism of the descending portion of the aortic arch. Its outline was plain whether viewed from front or behind.

This case suggests the advisability of an x-ray exam-

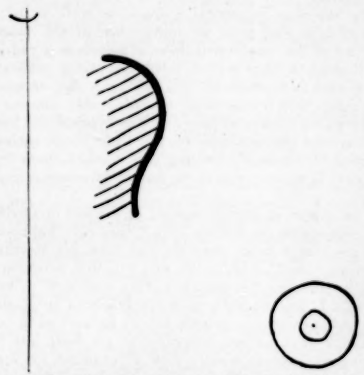


FIG. 7. Case X. About one-half original size.

ination before dilatation for esophageal constriction in some cases.

In conclusion, x-ray examinations should be made both with the fluorescent screen and the x-ray photograph. Normal outlines in the upper part of the chest give us the best assurance that an aneurism of the aorta is not present, though symptoms may obtain which lead the physician to suspect it. Outlines suggestive of aneurism may be caused by a new growth, for example. To make a definite diagnosis of aneurism by the usual physical examination we may be obliged to wait for the development of marked signs, and this delay defers treatment. Before operating on an aneurism near the thoracic aorta the latter artery should be examined by the x-rays, for if an aortic aneurism exists, operation would be unadvisable. X-ray examinations enable us to determine the extent of the aneurism, whether or not it is increasing, and in some cases to make a diagnosis before there are physical signs.

To Dr. William H. Rollins, who has done so much by his investigations to make the use of the Röntgen rays practicable in medicine, I desire to again express my obligation for his untiring helpfulness in my work.

A STERILIZER AND EQUIPMENT FOR CONFINEMENT CASES.[1]

BY FRANK A. HIGGINS, M.D., BOSTON,
Assistant in Obstetrics, Harvard Medical School; Physician to Out-Patients, Boston Lying-in Hospital.

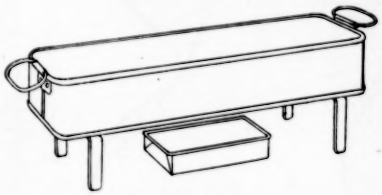
RECOGNIZING in my own practice the shortcomings and inconvenience of the ordinary obstetric bag and outfit as commonly sold in the surgical supply stores, and feeling the need of a more perfect yet not elaborate equipment, I have gotten together these things, which, so far as I have already been able to determine, answer the purpose for which they have been designed, and would also be sufficient for all except the most serious operative complications with which we are likely to meet in our obstetric work. Being frequently asked by the medical students with whom I come in contact and occasionally by a practitioner about the contents of my obstetric bag and what I am accustomed to carry to a normal confinement case, I have taken the liberty of showing my outfit to the Obstetrical Society.

By the man in general practice, as well as by the specialist in obstetrics, the importance of the careful practice of the simpler principles of asepsis as a routine in all cases of labor is now, I believe, pretty generally recognized and practised, and although one occasionally meets with a man doing a considerable amount of confinement work who has very little regard for asepsis and who perhaps uses only a little weak carbolic solution for his hands and neglects to wash them first, yet such instances seem to me now to be comparatively rare.

The almost universal custom at present of sterilizing instruments by boiling has, I dare say, impressed the need of a light, portable and compact sterilizer upon every one, as it has on me, who has occasion to boil instruments frequently in the ordinary private house. It has generally been my lot, both in general surgical operating in private houses as well as in confinement work before operating, to go down into the kitchen and search, usually with poor success, for some suitable basin or kettle in which the instruments may be boiled. To find such a utensil is more difficult for the obstetrical forceps than for the general surgical instruments, because of their length. Moreover, the doubt about such dishes being surgically clean, even after boiling, I have often questioned, and this point might arise to worry one in case of the occurrence of a subsequent sepsis. If there is a trained nurse at hand, who is known to be competent and faithful, such work is of course usually entrusted to her, and if she has been in the house long enough to have anticipated the possibility of an operation, she will probably have had a fish boiler or something equally good provided, but if such is not the case, as usually happens to the young man in practice, the difficulties are then his own.

Recognizing these facts, I have had made this small portable sterilizer, which seems to answer the purpose very well. It is practically only a covered box of nickel-plated sheet copper, approximately about fourteen inches long by five inches wide and two and three-quarters inches deep. The cover fits inside the top, and while not absolutely tight it is sufficiently so to prevent the escape of much steam. Inside on the bottom is the ordinary thin metal perforated tray on which the instruments lie. The tray, as well as the sterilizer itself, has swing handles which fold over and thus take up no extra room.

The sterilizer is designed so that it may be used either on top of the ordinary coal or gas range or with an alcohol lamp. The alcohol lamp with the sterilizer I have found very efficient for the purpose. It is a small metal box, two and a half by four and a half inches and seven-eighths of an inch deep, fitted with a cover. The box is filled with asbestos, which is covered with wire gauze. For fifteen minutes' boiling it requires about two ounces of alcohol and it burns with a very hot flame. When the lamp is used the sterilizer is raised by inserting the four small legs into the slots, one of which is seen at either corner. With the sterilizer about two-thirds full of cold water it boils with the alcohol lamp in six minutes; with hot water, which we would practically always have, and over a gas or coal range, there is no delay in the boiling. The sterilizer complete with the lamp weighs only about three pounds. It easily holds the obstetric forceps and what few other instruments are required in obstetric work. From my experience with it, it seems to me that its comparatively slight additional weight is much more than compensated for by its convenience and the increased comfort and safety one feels in its use. It readily fits into any operating bag, and as the instruments are carried in it, very little extra room in the bag is required. I believe that a sterilizer a little larger, slightly broader and deeper, made on the same plan would be sufficient for the instruments for any operation and would prove to be a great convenience to any surgeon who is operating frequently in private houses or outside of the city.



Sterilizer and lamp.

I wish to say, however, that the idea of a sterilizer for the obstetric bag was not original with me, but was first suggested, so far as I know, by Dr. C. M. Green, who had one made for his own use several years ago, but which I had not seen before mine was ordered.

Edgar has recently published [2] a description of a sterilizer designed for his own use in obstetric practice. It is made of enamelled sheet iron, and consists of two trays, a male and a female one, and which are large enough to contain his whole outfit. These trays he uses for sublimate solutions, for hot and cold water for the asphyxiated infant and also to boil the instruments. The trays are carried in a leather case instead of a travelling bag. This is certainly a more elaborate scheme, but does not seem to me to be necessary, as I have always found at hand in every house a number of porcelain chamber wash bowls which answer every purpose for sublimate and other solutions.

These instruments are carried in my sterilizer: Ob-

[1] Read before the Obstetrical Society of Boston, October 17, 1899.

[2] New York Medical Journal, June 17, 1899.

stetric forceps with axis-traction rods, pelvimeter, scissors, long dressing forceps, long double-hook volsellum, several artery forceps, scalpel, one long-handled perineum needle, several curved needles, long aspirating needle, glass curved douche tube, soft rubber catheter, long gum-elastic catheter.

In addition to the above instruments, all of which are easily contained in the sterilizer, the following articles are carried in the bag: Thin rubber apron, linen operating gown, four-quart fountain syringe, stethoscope, nail brush, can sterile gauze, collapsable tube, green soap (sterile), bottle fluid extract ergot, bottle alcohol, silkworm gut, chromicized catgut, rubber gloves, spring scales, hypodermic syringe and tablets, gag and tongue forceps, bottle sublimate tablets, bottle saline infusion tablets.

Ether, ergot, sublimate tablets, tincture of green soap, lysol, cheap nail brushes, absorbent cotton and bleached cheese-cloth should be and usually are provided by the better class of patients for use in their own households. Such patients as are in a position to employ trained nurses are always glad to purchase these articles as a part of their preparation, and the nurse will, if so taught, see that they are obtained. Ether, absorbent cotton and bleached gauze are always provided by my patients, but the other things named I still carry.

It has been my custom of late to use in tying the umbilical cord either catgut or silkworm gut in place of the usual tape or bobbin. I do this partly because being smaller it sinks in better and gives a better knot and a tighter grasp, and also because it is always at hand sterile and therefore saves an additional article to provide and have ready.

The rubber fountain syringe has replaced the old Davidson bulb syringe, and although the fountain syringe may be found in practically every house, yet in giving an intra-uterine douche or a subcutaneous saline infusion, the necessity of having a container which is known to be clean seems to me cannot be questioned. The syringe is sterilized by boiling and carried in a sterile towel. It is used quite infrequently, and therefore seldom removed from the package.

No styptic solution for the control of uterine postpartum hemorrhage is used, because gauze packing has proved to be equally efficient and better in every way. The can of baked gauze for the intra-uterine packing is one long strip for ease and safety in removal from the uterus. It is odorless, more convenient to prepare, and just as good for a styptic as iodoform gauze, which is usually recommended, and it will remain sweet for the comparatively short time which it is necessary to keep it in the uterus. The gauze purchased by the patient, twenty-five or fifty yards at three cents per yard, is to be made into vulvar pads and sponges and sterilized by the nurse.

I believe the small spring scales in general use are very inaccurate, but nothing else with which I am acquainted takes their place and most households are not provided with a suitable weighing balance.

There are only four bottles in the outfit, and of these only two contain liquids. The bottles themselves are heavy flint glass, with ground-glass stoppers and metal screw caps; the danger from breaking and leakage of liquids is therefore reduced to a minimum.

The canvas lithotomy sling is carried by some obstetricians, and is said to be very convenient in operative work when short of assistants. I believe it may be advisable to add it to the list.

I have found it very convenient to have a pair of rubber gloves ready for use under certain circumstances, although I do not make a practice of using them in every case, as advocated strenuously by some men. I believe it is comparatively easy to make the hands sufficiently aseptic for this work, and recent bacteriological work has proved that the normal vagina contains no pathogenic bacteria. Therefore it seems probable that the majority of infections occurring under ordinary precautions at the time of delivery are due to contact of the examining hand with the hairy labia. It is best when possible always to shave and scrub the external genitals, and thus remove, as far as may be, what is now generally accepted as the most likely source of infection.

This list of articles for the obstetric bag seems to me to be condensed about as far as consistent with the best work, and also to be elaborate enough to cope with any ordinary emergency. Any strong bag of moderate size, which will hold these things, is easily carried and suitable for the work. Personally I think it is better to have one which is not distinctive to the specialty.

ON THE HIGH OPERATION FOR DISEASE WITHIN THE SCROTUM.

BY J. G. MUMFORD, M.D., BOSTON.

There are certain distinct disadvantages in opening the scrotum for disease in that region. These disadvantages have long been recognized. The character of the skin and hair render disinfection difficult; the apposition accurately of cut edges is not easy; and the subsequent bandaging, cleansing, and care of the field are troublesome for the surgeon and extremely uncomfortable for the patient. This is true especially in such cases as long-standing hydrocele and hernia; for then the skin has become greatly stretched and its shrinking into folds subsequent to removal of the mass renders the proposition of primary union anything but simple — a proposition frequently solved, to be sure, but solved under peculiar disadvantages.

In the case of operation for large scrotal hernia, if the incision be carried from the internal ring to the apex of the scrotum, we have later to deal with a wound traversing two distinct varieties of skin and soft parts — a condition to be avoided always when possible.

In the ordinary Volkmann operation for hydrocele we have the scrotum alone opened, to be sure, but we have a relaxed bag left, instead of firm resisting tissues to deal with. The same statement holds true of such tumors as chronic orchitis, epididymitis and sarcoma. Moreover, after removal of the tumor in all these cases, a considerable hemorrhage is apt to persist, and the hemostasis is rendered so difficult that a secondary ooze and blood clot, with consequent increased risk of sepsis, result frequently.

In certain conditions, to be sure, the scrotum must be opened always. These conditions are malignant disease involving the skin and subcutaneous tissues, and tuberculosis or other burrowing suppurative disease.

Another disadvantage of the scrotal incision — a disadvantage the most important of all — is the great diffi-

culty of securing here an aseptic field, and the resulting condition of a loose, denuded cavity within the scrotum in immediate contact with a skin field but incompletely disinfected.

That all these things are very real dangers every surgeon knows. I doubt if there is another region of the body, presumably suited for aseptic work, in which our asepsis breaks down so frequently as in the scrotum.

The idea of the high operation for these scrotal diseases is no new one; but it was not until some two years ago, in a talk with Dr. Harvey W. Cushing, of Baltimore, that the applicability of the high operation to nearly all these cases was suggested to me. Since that time I have had many opportunities of applying the principle. I have come to regard it as a most useful procedure, and a distinct advance in the surgery of these parts.

The operation consists simply in making a short incision in the groin, similar to that made in the familiar Alexander operation for shortening the round ligaments. This incision opens a window through which all the contents of the scrotum can be reached with perfect ease. The field can be made surgically clean and kept so during convalescence, and the buried silver suture ensures a rapid healing. There is no wounded scrotum to support and protect, no slipping of bandages, no fouling with urine. The scrotum hangs naturally in its normal position and does not enter at all into the problem of after-treatment.

The first case in which I used this method was one of extensive varicocele. On opening down upon the structures about the cord, the usual two large tortuous veins were exposed and resected, and a small vein was left sufficient for the normal circulation of the parts. In such cases and by this method a beautiful anatomical demonstration is made. Nothing safer or more effective could be imagined. In all of these cases — and I have now employed this method in eight — the healing has been rapid and uncomplicated and the results satisfactory. In varicocele the method is most applicable.

Three cases of double orchidectomy for chronic hypertrophy of the prostate have come in my way, and in these cases the high operation has given gratifying results. When the cord and vessels have been exposed freely, and the wound made dry, the scrotum is invaginated and the testicle easily turned up into the wound in the manner so familiar in the radical cure of inguinal hernia. The scrotal contents may then be removed with a minimum of resulting hemorrhage and the cord and vessels separated and tied off intelligently and at leisure. A similar operation was done in a case of chronic epididymitis of long standing. The septic mass intact was removed through the high incision without infecting the wound. In this case there was much hemorrhage from the sac, and the persistent ooze resulted in a considerable clot, but the convalescence was rapid and complete. In such cases I recommend the free removal of the tunica vaginalis, else the secretion from its bruised serous surface will give rise to a considerable tumor.

It might appear that the radical cure of hydrocele by removal of the sac would be difficult when the high incision is employed, but such is not the case. A mass of moderate size may be delivered through the wound in the groin; and if the tumor be too large for this maneuvre, the fluid contents may be withdrawn, after which inversion of the scrotum is easy and the further steps of the operation self evident.

Large solid movable tumors within the scrotum may present some obstacles to the high method, but it is surprising to see how considerable a mass may be delivered, and if this be found impossible, a slight prolongation of the incision into the scrotal tissues will solve the problem readily.

Of the operation for scrotal hernia it is needless to speak. If the principle of the high incision be borne in mind the scrotum will not be opened in the great majority of cases, as the manipulation necessary for freeing the sac and its contents can be carried on easily without so doing.

Such examples show the applicability of the high operation for disease within the scrotum, and experience proves that this useful procedure may be employed in most cases of disease in this region.

Clinical Department.

A CASE OF PTOMAINE POISONING.

BY W. P. COUES, M.D., BOSTON.

P. M., age twenty-six, married, occupation inside man in a large store, had always been well and strong, with the exception of a rheumatic attack seven years ago. While at his work in Brookline the afternoon of April 24, 1899, he was seen suddenly to fall down, striking his face against the floor and breaking off part of a front tooth. A doctor was called, who, it was said, gave some medicine and sent him to his home in Boston in a carriage. He had left home early that morning feeling perfectly well, taking with him his luncheon, which consisted of chicken sandwiches and cocoanut pie; this was supplemented by some sardines obtained at his place of work. These facts I learned from the patient's wife and the friends who had brought him in the carriage from Brookline.

He was seen about 7 P. M. of the same evening. The result of the examination showed a large, well-developed man, in a condition of profound collapse. The extremities were cold, there was no pulse at the wrist, the man seemed *in extremis*. There was no bleeding from the nose or ears, the tongue was thrust out with difficulty, but in the median line. The patient was in a semi-conscious condition. The pupils were equal and reacted to light. The cardiac area of dulness was not increased.

The result of the examination of the lungs and the abdomen was entirely negative. The cardiac sounds could be made out with difficulty with the stethoscope. He complained of much pain and oppression in the precordial region, could only speak after great effort, and was constantly tossing about and rolling his head on the pillow. Heaters were placed around him, he was given strychnia, one-fifteenth grain, digitalis, fifteen minims, and shortly after, one-eighth grain morphia. His pulse after this was perceptible at the wrist, and the extremities grew warmer, he gradually responded to stimulation. He vomited twice, the vomitus consisting of finely divided, yellowish curds. His bowels moved, the movement being large and watery. The pulse remained for a long time very weak and thready, but he became more conscious and

spoke rationally. The next morning he was comfortable, pulse 100, temperature 100°. The urine showed one-eighth per cent. albumin; the sediment contained many fine granular casts. The albumin and casts disappeared in a few days, and the patient was soon as well as usual.

The points of interest in the case seem to be:

(1) The sudden onset of the trouble, which, with the previous rheumatic history, suggested collapse from cardiac disease.

(2) The profound shock, the pain in the precordial region.

(3) The nature of the last food taken, the vomiting, subsequent movement of the bowels, and gradual relief of symptoms.

Reports of Societies.

THE OBSTETRICAL SOCIETY OF BOSTON.

MALCOLM STORER, M.D., SECRETARY.

Meeting of October 17, 1899, the President, Dr. Alfred Worcester, in the chair.

Dr. F. A. Higgins read a paper entitled

A STERILIZER AND OUTFIT FOR CONFINEMENT CASES.[1]

Dr. C. M. Green: This sterilizer is an improvement upon others on account of its lightness. My own is a great deal larger, large enough to sterilize many instruments which, on the other hand, often do not require to be sterilized. My sterilizer is a copper box without legs, and for heat I rely either upon the gas lamp that can be found in most houses or upon the kitchen range. My bag is based upon the principle of packing everything into the sterilizer except the rubber gown, douche bag and ether, and therefore my sterilizer is three times the size of Dr. Higgins's. After all, the individual apparatus one man or another uses is not of so much importance; the real merit of a paper like that of Dr. Higgins is to emphasize for the benefit of the medical public the necessity of doing aseptic work, which with an apparatus somewhat like this is not so very hard to carry out properly.

Dr. E. Reynolds: I can speak with much warmth about this sterilizer, for I regard it as just about what a sterilizer should be. My first impression was that it was too small for practical use, but a single trial convinced me of the contrary. It holds easily all that I need in an ordinary case. To be sure, I carry a few others besides those Dr. Higgins has enumerated — for instance, a set for an emergency symphyseotomy — but all go in easily. The quickness and power of the lamp that Dr. Higgins has shown is also a great comfort. I have the sterilizer all prepared at hand, and when the obstetrical climax approaches it is simply brought in and placed upon a convenient table and everything is ready for use a few moments after the lamp is lit. As regards the kit, personally I do not care to etherize a patient without having at hand a tracheotomy dilator, as well as the knife we always have. As regards gloves, I have become a thorough convert to their use in surgical work. I never operate or even make a vaginal examination without covering my hands with rubber, and I think that my results have not suffered thereby. In obstetrics I have employed them ever since they became easily obtained, using them often only upon one hand. I do not like to get vaginal mucus under my finger nails and possibly carry it from one patient to another. In many cases the preservation of the perineum is assisted by the shelling out of the head with one finger in the rectum, and in such cases it is a great advantage to have the hand covered, especially if it is subsequently necessary to do any operative work. The bare hand cannot be quickly disinfected, while it is easy to peel off the glove and have the hand already sterile.

Dr. J. B. Swift: I have been interested in Dr. Higgins's sterilizer because it is much like the one I carry. Mine is a little deeper. I carry all my instruments packed in the sterilizer. I have everything already sterilized at home and packed in canton flannel bags. I do this as it is not always convenient or indeed possible to get things sterilized at the bedside in time. I recognize the advantages in gloves Dr. Reynolds has spoken of. Dr. Swift then demonstrated his consultation bag.

Dr. Higgins: I had not seen Dr. Green's apparatus when I had mine made. I have sometimes thought that mine is a trifle small, but it has served very well in the class of cases for which it was intended — local and ordinary cases.

Dr. J. G. Blake spoke in the most complimentary terms of the thoroughness of the aseptic teaching given at the Harvard Medical school. As he saw cases in consultation, he was often much impressed by the accurate and complete observance of aseptic principles on the part of the younger general practitioners.

Dr. M. H. Richardson read a paper entitled

OVARIAN CYSTS WITH TWISTED PEDICLES.

Dr. Swift: I should like to inquire, whether in cases in which the operation is not done for some time after acute symptoms are seen it is customary to find an extensive general peritonitis.

Dr. Richardson: In all the cases in which there was delay the tumor was totally adherent.

Dr. Swift: In a case of mine last spring in which there was considerable unavoidable delay I found the tumor so firmly adherent everywhere and especially to the posterior side of the uterus that I had to remove the uterus with the tumor. The patient died septic, probably from a tear of the rectum, though none was seen at the operation.

Dr. E. Reynolds: I have seen five cases of the strangulation of ovarian tumors. The only one without adhesions was a solid tumor of the ovary, the walls of which were extremely friable, and the peritoneum red and rough. She died of embolus, presumably of septic nature. In this case the blood supply was cut off immediately after labor, there being no real torsion. In another case, in which hysterectomy for sepsis was being done by a distinguished obstetrician, upon opening the abdomen a strangulated ovarian tumor was found, apparently caused by delivery.

Dr. F. H. Davenport referred to the peculiar friability of these tumors and instanced a case of his in which there were few adhesions but it was almost impossible to get the tumor out whole.

Dr. J. C. Munro: I remember two cases in which the twist was so near the uterus that I had to tie off very close indeed to it. As regards the difficulty of

[1] See page 88 of the Journal.

diagnosis, I remember one case in which the diagnosis of appendicitis was made, and another seen in consultation with a number of the staff which was generally regarded as one of pregnancy associated with pyosalpinx.

DR. H. E. MARION: My experience in this interesting condition is limited to two cases, oddly enough seen on the same day, one of them coming in Dr. Richardson's list.

DR. W. L. BURRAGE: In looking over my notes I find that I have seen five cases, four of them being in women over sixty-one, the fifth being in a girl of thirteen thought by her friends to be pregnant. In one case the patient was an extremely feeble old woman, but recovery after operation was prompt. I think we ought to distinguish very carefully between mere twist and actual strangulation.

DR. MALCOLM STORER: I am glad to hear Dr. Burrage make this distinction. In a paper[2] read before this Society some years ago, I stated that an average of the observations of a number of men shows that rotation occurs in at least 25 to 35 per cent. of all ovarian tumors, but actual strangulation in only 8 to 11 per cent. In the four cases which I have myself operated upon, in two in which there were two or three twists there was no reaction on the part of the tumor or of the patient. The third case was an old woman, with obscure history and in very bad condition, whom I saw just at the change of a service and foolishly deferred operation. Dr. Burrage subsequently operated with success. My fourth case was in a woman five months pregnant. She had had three attacks of typical pain within a few weeks. I operated and found a tumor with three twists slightly adherent. She brought the child into my office a few days ago to show me. Dr. Burrage has asked my opinion as to the causation of these torsions. My reading has led me to believe with Dr. Richardson that many causes may produce a twist, but that it is especially apt to occur in more or less irregular tumors, the projections acting like ratchets. Mouls and Reboul have mentioned two pathognomonic signs: a systolic murmur at the tender point and a pulsating movement of the tumor coincident with the cardiac beat.

DR. RICHARDSON: I want again to emphasize the difficulty of diagnosis. In one case no tumor could be felt, yet two weeks later there was one filling the abdomen. Any abdominal tumor that is tender and associated with shock should excite suspicion. I have been struck by the comparatively slight symptoms in some of these cases that had extended over some time.

DR. REYNOLDS suggested that the sudden increase in size of these tumors might lead to a sudden sweating, so to say, and thus cause adhesions and pain.

DR. COUNCILMAN: I should hardly think the easily broken up adhesions Dr. Richardson speaks of were real connective-tissue adhesions, being more likely mere fibrin.

BEQUESTS OF DR. DANIEL GARRISON BRINTON.—The late Dr. Brinton, formerly the editor of the *Medical and Surgical Reporter*, has bequeathed to the University of Pennsylvania his valuable library and manuscripts relating to the science of ethnology, a branch of learning to which the latter part of his life was mainly devoted.

---

[2] Boston Medical and Surgical Journal, November 5, 1896.

Recent Literature.

Enlargement of the Prostate; its Treatment and Radical Cure. By C. MANSELL MOULLIN, M.D. (Oxon.), F.R.C.S. Second edition. Pp. 205. London: H. K. Lewis. Philadelphia: P. Blakiston's Son & Co. 1899.

The first edition of this book was published at a time when radical operations upon the prostate had passed the probationary period of their development, but were still by no means upon so firm a footing as to be beyond the attacks of their opponents. The writer announced himself as a champion of such radical operations, and in his preface said, "And now it is not too much to say that perfect relief can be assured even in the most advanced stages of the disorder."

The second edition brings the book well up to the present-day knowledge of the subject, and, omitting descriptions of many of the older operative procedures, now chiefly of historic interest, confines itself to those whose practical value is vouched for by the writer's knowledge and large experience.

Of the eleven chapters which the book contains, nine are devoted to a consideration of the (1) normal prostate, its function and development, and (2) the enlarged prostate, its causes, effects upon other organs, its symptoms, diagnosis and palliative treatment, both local and general.

The last two chapters take up the various radical operations and the problems they involve. In his preface to the present second edition, the writer has evidenced his faith in the efficacy of such operations by saying: "There is now no case of enlargement in which perfect relief cannot be obtained, provided only the secondary consequences, which so often and so entirely unnecessarily follow it, and which are due in the vast majority of instances to the careless use of catheters, have not been allowed to work irreparable harm upon the walls of the bladder. In no department of surgery are the disastrous results of temporizing and delay shown more clearly than in that which is concerned with the prostate."

The various radical operations are carefully considered and the place for each is defined. In speaking of ligature and division of the vas deferens as a substitute for orchidectomy, the author is evidently of the opinion that orchidectomy is much to be preferred and that ligature is suited only to a very limited class of cases. The Bottini operation is favorably commented upon and the author's three successful cases are mentioned but not fully reported. The book merits the attention it will undoubtedly command from the surgical profession.

An American Text-Book of the Diseases of the Eye, Ear, Nose and Throat. Edited by G. E. DE SCHWEINITZ, A.M., M.D., Professor of Ophthalmology in the Jefferson Medical College, Philadelphia, etc., and B. ALEX. RANDALL, M.A., M.D., Ph.D., Clinical Professor of Diseases of the Ear in the University of Pennsylvania, etc. Pp. 1,251. Illustrated with 766 engravings, 59 of them in colors. Philadelphia: W. B. Saunders. 1899.

In the portion of the work devoted to the eye, its embryology, anatomy, histology, physiology, diseases and injuries are discussed in twenty-four sections by

twenty-four authors; its operative surgery in seven sections by as many authors. In the portion of the work devoted to the ear, its anatomy, physiology, diseases and injuries are discussed in thirteen sections by fourteen authors, while diseases of the nose and throat are described in twenty sections by nineteen authors.

As the work aims to be both a text-book and a volume of reference to which the practitioner may turn, the practical side of the questions discussed has been brought into prominence.

All the contributions have evidently been written with great care. The articles are, as a rule, comprehensive and accurate, and an absence of padding characterizes the entire work. The suggestions with regard to treatment have been brought up to date more nearly than in some of the collaborative works that have been lately published. The gentlemen who have been asked to write are all well-known practitioners of the highest skill, and perhaps no better praise can be given in this journal than to publish the list of the Boston contributors, who are: Dr. Clarence J. Blake, Dr. J. Orne Green, Dr. John W. Farlow, Dr. Geo. A. Leland and Dr. J. H. McCollom.

The publishers have done their part of the work well, and the paper, type and illustrations are all that could be desired.

Surgical Nursing. By Bertha M. Voswinkel, Graduate of Episcopal Hospital, Philadelphia, etc. Second edition, revised and enlarged. Pp. 206, with 112 illustrations. Philadelphia: P. Blakiston's Son & Co. 1899.

This book has been written, its writer states, for nurses whose surgical training has been limited and whose technical education is not sufficient to render them thoroughly conversant with all its details. An attempt has been made "to give a concise outline of surgical nursing in general, together with a list of antiseptic agents, the mode of preparation of the various materials used in aseptic and antiseptic surgery, and finally the application of splints and fixed dressings."

As one reads the book the impression is created that it was written by one whose training has been local rather than general, and whose experience has been acquired from hospitals rather than in private work, also that the subject under consideration is not always kept in view. As an illustration the following quotations are made:

"In case of an emergency when an antiseptic dressing is required and no gauze is at hand, absorbent cotton may be used, first baking it for a few minutes in an oven; then wet it with bichloride solution, then dry, and keep in cheese-cloth bags." In describing the use of instruments at an operation it is directed that soiled instruments, presumably those dropped on the floor, or otherwise accidentally infected, are to be cleaned by rinsing in a tray of hot water before being again placed in use. For the "nurse whose surgical training has been limited," it is somewhat disappointing to find that in the whole book the only statement relating to the sterilization of instruments is that "All instruments should be thoroughly sterilized before and after using."

We are familiar with Thiersch's solution and Professor Kocher's method of preparing catgut, but have not heard of the borosalicylic solution highly recommended by "Tersch," or the catgut of "Koscher." Neither have we seen a "mouth"-tooth forceps. The work of the publisher is quite satisfactory. The book is conveniently indexed, contains a great deal of information, a knowledge of which is essential to the modern surgical nurse, and for some reason or other it has reached a second edition.

A Practical Treatise on Materia Medica and Therapeutics. By Robert Bartholow, M.A., M.D., LL.D., Professor Emeritus of Materia Medica, General Therapeutics and Hygiene, in the Jefferson Medical College of Philadelphia; formerly Professor of Materia Medica and Therapeutics and of the Practice of Medicine in the Medical College of Ohio, etc. Tenth edition, revised and enlarged. New York: D. Appleton and Company. 1899.

There are such good books already published on this subject that a new work or even a new edition of an old one is only justified when it furnishes some substantial addition to our present knowledge. This cannot be claimed for the above volume. Far from deserving praise, it merits disapproval, because it contains so many erroneous statements and shows so scant an acquaintance with the present medical literature.

One is constantly meeting passages like the following, on page 30: "Within the present year (1880) Mr. Arthur Meldon has published an account of three cases in which the transfusion of milk was performed with success." As authority for another remark, he considers the *New York Medical Journal* for February 3, 1883, a recent issue, page 31. The eighth edition of the author's own work was published in 1893. Under "authorities referred to" on transfusion, the latest date given is 1886.

We fail to understand the author's position when he says, page 34: "Although fat is necessary to the stomach digestion, it does not undergo conversion in the stomach, and escapes in a coarse emulsion, with the chyme, into the duodenum." We should like to know the experimental basis on which this conclusion rests.

"Arsenic" (page 75) "has seemed to the author remarkably beneficial in diabetes of hepatic origin." But the experience of the profession does not confirm the truth of this statement and that this is published in the tenth edition of a book on therapeutics is inexcusable. In the clinical index is to be found under diabetes, "The milk cure has succeeded remarkably in some cases; buttermilk *may* be better." And in the text, page 60, "In consequence of the large proportion of lactic acid which it contains, buttermilk is more especially indicated in diabetes."

Those interested in children's diseases will certainly be somewhat taken aback to learn that, page 60, "In the author's experience, children, with few exceptions, do well on condensed milk." And so we might go on. Such a book is unworthy of the medicine of to-day.

Selected Papers on Stone, Prostate and Other Urinary Disorders. By Reginald Harrison, F.R.C.S. Pp. 190, with 15 illustrations. London: J. and A. Churchill. Philadelphia: P. Blakiston's Son & Co. 1899.

This little book is made up of a collection of sixteen articles which have appeared from time to time, during the last half dozen years, in various periodicals, chiefly of English publication. The chapters have no sequence or connection with one another, and are written for the surgeon rather than for the student of medi-

cine. The first article, Vesical Stone and Prostatic Disorders, was the Bradshaw Lecture delivered at the Royal College of Surgeons in December, 1896, and consists of a necessarily brief résumé of this large subject. It is followed by a chapter headed, A Further Contribution to the Surgery of Stone in the Bladder, and containing a table of the author's cases of stone, 110 in number, treated by litholapaxy during the years 1890–97.

The other articles cover a wide range of genito-urinary subjects of interest at the present day. All are short, all are written in an attractive and readable way, and all give glimpses of Mr. Harrison's great experience, which will be welcomed by readers interested in genito-urinary surgery.

Raynaud's Disease (Local Syncope, Local Asphyxia, Symmetrical Gangrene), its History, Causes, Symptoms, Morbid Relations, Pathology and Treatment. By THOMAS KIRKPATRICK MONRO, M.A., M.D. Pp. xii, 251. Glasgow: James Maclehose & Sons. 1899.

The present monograph gives an excellent account of this rare affection based upon a careful study of the literature, from which the writer has collected and tabulated one hundred and eighty cases. It begins most appropriately with a brief biography of Maurice Raynaud, whose original description of the affection has been but slightly modified by subsequent researches. The author, in fact, at the end of his labors, returns to Raynaud's original theory that local syncope and asphyxia are due to spasm of the small vessels, which, if unduly prolonged, leads to gangrene; and that this spasm depends upon an abnormal excitability of the vasomotor centres in the spinal cord. The theory that the trouble is due to peripheral neuritis is, after careful consideration, rejected. To all who may be interested in Raynaud's disease the volume will afford a very complete summary of our present knowledge.

Minor Surgery and Bandaging. By HENRY R. WHARTON, M.D., Surgeon to the Presbyterian Hospital, etc. Fourth edition, revised and enlarged. Pp. 594, with 502 engravings, many being photographic. Philadelphia and New York: Lea Bros. & Co. 1899.

The demand for this book is shown by the fact that it has reached its fourth edition in a period of eight years. This fact also is evidence of the energy of its author and his desire to maintain a high standard of excellence in regard to the work and to have it an exponent of the most modern ideas. In addition to a careful revision, the new feature of the present volume is the addition of a chapter on Surgical Bacteriology, which is a brief résumé of the subject, also the section devoted to Operative Procedures on the Cadaver, including descriptions of not only the usual typical ligations, amputations, resections and excisions, but also some atypical ones, such as esophagotomy, gastrostomy, pyloroplasty, intestinal suture and anastomosis, osteotomy, etc. The descriptions are brief and are not intended to take the place of elaborate and fully detailed ones given in special works on operative surgery. The list of illustrations has also been increased. The section on Bandaging describes the various applications of roller bandages. If the initial and terminal ends were more clearly designated in some of the illustrations the student would be saved some study.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, JANUARY 25, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.

THE DISPERSION OF BEQUESTS.

WITH the constantly increasing tendency toward the accumulation of wealth in the hands of single individuals, the ultimate disposition of that money becomes of more and more importance. Charitable objects in general are no doubt claiming greater recognition than ever before, and among such charitable objects the hospital is being accorded an important place. A tendency which, on the whole, is unfortunate is also observable, and that is that in the final distribution of single great fortunes new enterprises are often inaugurated which in themselves are not particularly needed. We have had ample demonstration of this fact in America in the founding, for example, of new universities in the immediate vicinity of old established institutions, in consequence of the bequest of a single individual. This process of multiplication shows no evidence of abatement; on the other hand as individual collections of money grow larger, thereby rendering possible the foundation and at least temporary support of a newly-fledged institution, the temptation to men of means and personal ambition is constantly increasing to put their money into an object which will be definitely associated with their names in the years to come. The general cause of education and of charity no doubt suffers in the long run through this multiplication of existing institutions. What we need is concentration, and for various reasons.

In the first place, the question of expense is of paramount importance. It is a self-evident fact that a preliminary problem merely is solved when buildings are equipped and an institution started on its course of usefulness. Experience has shown that the strain comes when continued support of the institution is demanded, as demanded it must be as soon as it enters upon its active work and is forced to meet the exigencies of improved methods and widening knowledge. As a consequence of this need for increased resources, which frequently are not forthcoming, institutions started by single-man beneficence are apt to

languish when the original source of income fails. To endow an institution in perpetuity is nowadays quite impossible, because one is absolutely unable to see the extent and direction of the expansion of its work in the future. Who could have foreseen, for example, thirty years ago, that expensively equipped laboratories would so soon come to form a necessary adjunct to the modern hospital, or that elaborate arrangements for sterilization and buildings of special construction would be essential to the proper care of the sick? This inevitable expansion always demands large pecuniary resources, and, in consequence, many institutions are now being restricted in their work, because money which might otherwise have come to them is being constantly directed into other channels, leading to the foundation of new institutions of various sorts. This is not economy. It means a duplication of much that already exists, and is quite capable of expansion at a much less expense than is necessitated by an entirely new plant, with its complicated machinery of paid officials and all that goes with the management and conduct of a new institution of whatsoever sort.

What we have said is true of many great public enterprises, educational or otherwise, and applies with particular force to hospitals. A modern hospital is an enormously expensive institution to conduct in a progressive way; its buildings and equipment lack in a peculiar manner the elements of permanency. What is useful to-day may be discarded to-morrow, and improvements of various sorts are an almost daily demand. Since this is so, it is always a matter of regret that sums of money of considerable, as of small, amount should not be left to institutions already in existence, or to seats of learning, which have the confidence of the public, and which would expend such money in the most economical and judicious way to the end of improving medical education and the care of the sick. If it be desirable to have a hospital for the care of those ill with chronic disease, which, as we have frequently had occasion to express, seems to us a crying need, why not establish such a hospital as a department of one already existing, or build a new one in connection with some public or corporate institution, which would stand behind it in the years of growth and development which are sure to come, attract to it fresh endowments and thereby preclude the failure of a naturally expensive undertaking. Otherwise the tendency must be toward disintegration and toward the ultimate multiplication of institutions to the good of none, and to the probable detriment of all. What we need above all things are hospitals strong in resources and not merely in brick and mortar. Whether or not a hospital can be advantageously conducted by an educational institution is a question which merits separate consideration.

But from every point of view, it seems to us desirable that public sentiment should be directed in such a way that gifts of money, by will or otherwise, should go toward the improvement of institutions already in existence, or toward the founding of departments in close touch with established institutions of broad scope and ample means to ensure the safety and continuance of the work of the new enterprise.

THE WOUNDED IN SOUTH AFRICA.

Reports are rapidly coming from the seat of war in South Africa which bear out the more limited experience of our late war with Spain regarding the effect of the modern rifle bullet, and particularly of the Mauser, which is now universally regarded as the most humane of those in use. Sir William MacCormac, writing to the *Lancet*, gives various exceedingly interesting details regarding wounds inflicted by Mauser bullets, wounds which a few years ago would have been thought quite incompatible with life. Sir William says: "One cannot help contrasting with amazement the comparative harmlessness of the injuries so frequently inflicted with the Mauser rifle bullet with the frightful extent of the damage done by those of the needle-gun and the Chassepôt. To any one familiar with the wounds caused by these weapons, many of those inflicted by the Mauser rifle might be regarded as being somewhat of the character of a 'pin-prick.' Quite a large proportion of the wounded, in fact, have returned to duty, and several patients whom I have seen have been wounded for the second time at another engagement."

Some of the cases recorded are as follows: A man was struck by a Mauser bullet an inch above the symphysis pubis, the exit wound being one inch above the level of the anus and somewhat to one side. After being wounded he ran about one-third of a mile without inconvenience, and at the end of a fortnight had completely recovered. A soldier was shot in such a way that the bullet passed through the stomach after having penetrated the ilium. The patient suffered no inconvenience whatever, and was able to eat as usual. A bullet wound through the skull with protrusion of brain substance, dressed on the field, gave rise to no symptoms, and the wounds were healed on the fourth day. Penetrating wounds of the lungs in several instances recorded were followed by a quick recovery.

These are some of the cases to which special allusion is made, and it is certainly not too much to say, as has elsewhere been suggested, that the surgical aspects of bullet wounds must be largely rewritten, in view of the present unfortunate rapidly accumulating experience.

On the other hand it would appear that the Mauser is not always so merciful as the above cases would seem to indicate. Surgeon C. Marsh Beadnell, in a letter to the *British Medical Journal*, speaks, for example, of a poor fellow "raving mad, who had been wandering about for hours with a portion of his frontal lobe protruding through a Mauser exit wound in the fore part of his skull." Another case of considerable

interest reported by the same writer, relative to the effect of the shock of an exploding shell, is as follows: "A shell exploded about ten yards over a Highlander's head; he was untouched by any fragments, but the concussion must have produced some curious pathological change in his nervous system, as he has never ceased (now ten hours) swaying his head to and fro with a pendulum-like motion similar to that of the china dolls with the nodding head so commonly seen in the London streets. His intellectual faculties have also been considerably disturbed, as he is only half rational." A collection of such cases bearing upon the effects of battle, mechanical or otherwise, would be of great value toward determining certain difficult points in connection with the results of trauma upon the nervous system, as we have previously had occasion to suggest in these columns. In general, we may certainly look for a large collection of data from medical men in the field which will prove of lasting scientific value; a poor compensation, but still a slight one, for the wholesale suffering which such a war of necessity entails.

Dr. Beadnell concludes from his investigations on the effect of bullet wounds that those wounds which heal up most rapidly and give the least trouble are wounds produced by bullets having these characteristics:

(1) A very high velocity.
(2) A flat trajectory, so that they hit apex first and do not keyhole.
(3) A hard smooth sheath with a smooth rounded apex.
(4) A close range, for the same reason as (2) a bullet at a long range may hit the object side on.

He says: "If I were to tabulate these missiles in the order in which the wounds produced by them were progressively more serious from above downwards, the table would read something as follows:

"(1) Mauser.
"(2) Krag-Jorgensen.
"(3) Lee-Metford.
"(4) Man-stopping Lee-Metford (hollow-headed nickel-sheathed).
"(5) Any of the first three with the nickel sheaths around the apex removed so that the lead nucleus is exposed.
"(6) Dum-dum.
"(7) Remington brass-coated, as used by the Filipinos.
"(8) Remington lead bullets or the Martini-Henry.
"(9) Remington brass bullet, with brass sheathing removed so as to expose the lead nucleus.
"(10) Shrapnel bullets.
"(11) Shell or their fragments.

"I have no acquaintance with explosive bullets; it is said the Boers have used them, but I think this to be exceedingly doubtful. Most thoughtful men will agree that the Boers have proved themselves to be brave men, and instances of a violation of the laws of civilized warfare are few and far between."

In general, the health of the troops appears to have been excellent; diarrhea, sunstroke and sunburn have been the most annoying maladies.

With regard to the latter trouble, the report continues: "The Highlanders are chiefly afflicted; why are men sent out in this fierce sun in petticoats? It is all very well to talk about the uniform being the essence of *esprit de corps*, but is not this carrying it too far? Surely they might be allowed to go into action at any rate as other men go. As it is, their legs become covered with crops of vesicles; few of the men like their dress for this kind of work; the beauty of the kilt and sporran is masked by a khaki flap, and when these two part company the aspect is both ludicrous and alarming; I saw one man returning yesterday from his brush with the enemy in a pitiable plight; in his own words, he had had to 'take' a barbed wire entanglement 'at the double,' and emerged 'a bleeding mass, with kilt hard a starboard, his khaki flap half-left turn, and his sporran dangling on the wire.'"

MEDICAL NOTES.

THE PLAGUE SITUATION. — Reports from Honolulu regarding plague are such as to excite considerable apprehension. The number of cases is increasing rapidly, and measures have been adopted by the Board of Health to burn infected buildings in the Chinese quarter, where the disease appears to have gained a foothold. Quarantine is strict and there is fear that the industry of the island, which lies chiefly in sugar, may be seriously hampered. Statistics reported to the Surgeon-General of the Marine-Hospital Service, ending January 19th, show cases from various countries, in part as follows: Honolulu, up to January 16th, 5 cases; Philippine Islands, 5 cases; Brazil, up to December 23d, 38 cases; China, 42; Japan, 13; Portugal, 10 cases and 7 deaths.

HOSPITAL STAFF FOR MANILA. — The War Department is reported to have arranged to send 150 hospital-corps men to the Philippines on the hospital ship *Missouri*, which is to sail from San Francisco some time next month. Acting Hospital Steward Cleveland Hilson, Jr., and 41 privates of the hospital corps, now at the Washington Barracks, D. C., will start for San Francisco in a few days.

FAMINE IN INDIA. — The famine situation in India is reported as worse than ever before. About 22,000,000 persons are now affected in British territory, and about 27,000,000 in the native states. The Viceroy, Lord Curzon, reports that the famine area has expanded, and they are now facing a cattle, water and food scarcity of a terrible character. About 3,250,000 persons are already receiving relief.

SMALL-POX IN INDIANA. — Small-pox is reported as prevalent in fourteen counties of the State. A recent report to the Board of Health showed 15 new cases in Clay County, and nine new cases from Vanderburg County. A general disinfection of the mails coming from infected districts will be undertaken.

STATE CARE OF TUBERCULOSIS PATIENTS. — At the coming meeting of the Medical Society of the State of New York special prominence will be given

to a discussion of the questions relating to State care of tuberculosis patients.

Arrival of the "Maine." — The American hospital ship *Maine* has arrived at Cape Town, South Africa.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, January 24, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 100, scarlatina 51, measles 66, typhoid fever 10.

Annual Meeting of the Boston Lying-in Hospital. — At the annual meeting of the Boston Lying-in Hospital Corporation officers were elected as follows: Nathaniel Thayer, President; Hon. Henry H. Sprague, Vice-President; Hon. George v. L. Meyer, Treasurer; William D. Sohier, Secretary, and William H. Baldwin, Thomas F. Edmands, Oliver Ames, Charles W. Hubbard, Wallace L. Pierce and Samuel Wells, Trustees. With them are associated Dr. J. Collins Warren and Dr. George B. Shattuck, from the Massachusetts Humane Society, and Hon. George G. Crocker and James G. Freeman, from the Massachusetts Charitable Fire Society. The hospital has taken care of more mothers during childbirth than last year, 647 patients having been treated in the hospital, 652 children were born there, and there were four deaths during confinement.

Diphtheria and Scarlet Fever Prevalent in Boston — There is a large amount of both scarlet fever and diphtheria in many wards of the city. Up to the latter part of last week 236 cases of diphtheria and 132 cases of scarlet fever had been reported to the Board of Health this year; the numbers are greatly in excess of the records for the corresponding period of last year. One of the reasons why these diseases are spreading is that there is a lack of accommodation at the City Hospital for the isolation of the patients. In many instances the victims of the diseases cannot be removed from their homes, and be isolated properly, for the reason that the Board of Health has no other place to which to remove them.

Boston Society of Medical Sciences. — A meeting of this Society was held January 16th, at which the following communications were presented. Dr. Mark W. Richardson read a paper on the "Cultivation of the Typhoid Bacillus from Rose Spots," and spoke of his own investigations on the subject. Dr. Theobald Smith spoke on the "Significance of Variation among Pathogenic Bacteria." Dr. J. H. Wright demonstrated an ingenious and simple method for anaërobic cultivation of bacteria in fluid media. Dr. E. W. Taylor showed a series of lantern slides illustrating various lesions of the nervous system.

The West End Nursery. — At the annual meeting of the corporation of the West End Nursery and Infants' Hospital the following officers were elected for the year 1900: President, Oliver Ames; Secretary, William Rotch; Treasurer, Nelson S. Bartlett; Directors, Frederick B. Allen, J. Arthur Beebe, Clarence John Blake, George A. Draper, Charles E. Inches, Mortimer B. Mason and T. M. Rotch. Two hundred and fifty sick infants have been admitted to the wards during the past year and 11,231 visits have been made to the Out-Patient Department.

Illness at Harvard University during the Year 1898–99. — The official statistical report of illness at the University shows a larger grand total than during the preceding year, but a decrease in cases of contagious diseases and injuries. The report says the latter is undoubtedly due to "more intelligent management of athletics." Among other specified disorders there were five cases of typhoid fever, 48 cases of measles, 126 headaches and seven instances of overwork. The value of statistics of this sort is not altogether apparent.

Advice to Prospective Medical Students. — The committee in the department of zoölogy in Harvard University has recommended to the Board of Overseers that undergraduates about to study medicine be advised to attend a preliminary course on the anatomy of the vertebrates and invertebrates, as well as two preliminary courses in zoölogy. The committee furthermore suggests the desirability of arranging that certain courses in the academic department should be counted in the term of medical study.

Compulsory Vaccination in Malden. — Through the investigation of the Board of Health it has been ordered, owing to the existence of a case of small-pox in Malden, that all school children must be vaccinated, and must show evidence of successful vaccination in order to be allowed to attend school February 5th. Many have not yet complied with the order.

Further Bequest for Harvard Infirmary. — It is reported that Mr. Stillman, of New York, who gave $50,000 last year for an infirmary at Harvard University, Cambridge, has recently added $50,000 more, to be used by the building committee at their discretion. Work on the building will be begun early in the spring.

Infectious Diseases in Outlying Towns. — Three schools were closed last week in Reading, Mass., on account of the prevalence of diphtheria. It is reported that 29 cases have appeared since December 20th. Fewer cases are reported from Cambridge, Newton and Brookline.

Endowment Fund for Newton, Mass., Hospital. — At a recent meeting of the Newton Hospital Aid Association, it was voted to establish an endowment fund for the benefit of the hospital.

NEW YORK.

Proposed Precautions against Premature Burial. — At a meeting of the Board of Health held January 17th a communication was received from Dr. H. J. Garrigues, chairman of a committee from the Society of Medical Jurisprudence, recommending such alteration of the sanitary code as will better guard

against premature burial; and provision was made for a conference of the Sanitary Committee of the Department with Dr. Garrigues's committee in relation to the matter. The communication recommends that only authorized practitioners of medicine shall decide whether a person is dead or not, and suggests a change in the blank forms of death certificates so that they be made to contain the declaration that the physician personally has examined the body. It is furthermore recommended that the chief signs of death be enumerated in the blank, and that the physician shall indicate the presence or absence of each with "Yes" or "No." Finally, it is suggested that by ordinance it be made illegal "to do anything to the body of the supposed dead which, if he were alive, would cause him pain or injure him, before the certificate of his death has been signed by the physician." With a view to the prevention of premature burials, a bill has been introduced in the Legislature which provides: (1) That no human body shall be buried in the State without the use of such apparatus or mechanical means as may be approved of by the State Board of Health, which will permit of the person whose body is so interred obtaining assistance from living persons in the event of such person having been in a state of lethargy or coma at the time of burial; (2) that any person violating the provisions of this act shall, if the person interred in violation thereof shall be proved to have been prematurely buried, be guilty of a felony, and if the person so interred shall not be proved to have been prematurely buried shall be guilty of a misdemeanor. No exception is apparently made in the case of those upon whom autopsies have been made.

INTERNATIONAL ORDER OF DOUBLE CROSS. — On January 1st, the International Order of the Double Cross, the object of which is the extension of Christianity by the combination of religious effort and medical services, was organized at a meeting held at the headquarters of the International Medical Missionary Society, on East 45th Street. Dr. G. Dowkontt, medical director of the latter Society, presided, and the twenty founders of the Order present represented ten different nationalities. Of these, ten were physicians, six medical students, and four trained nurses. One of the purposes of the Order is the uniting of all medical missions and medical missionaries throughout the world, and the active membership, which is open to persons of both sexes, is to be divided into four guilds, physicians, medical students, nurses and helpers, while all medical missionaries are to be considered as honorary members. The emblem of the Order, from which it takes its name, consists of the double cross formed by the crosses of St. George and St. Andrew. The following officers were elected at the meeting: President, Dr. G. D. Dowkontt; Secretary, Cyril H. Haas; Treasurer, the Rev. W. W. Smith, M.D.; Registrar, the Rev. Theodore F. Hahn. These four officials, together with Drs. John H. Busteel, Wm. Steward and H. Zeckhausen, constitute the Executive Council for 1900.

THE MONTEFIORE HOME FOR CHRONIC INVALIDS. — The directors of this institution have begun the erection of new buildings at the county sanitarium of the institution at Bedford Station, Westchester County, which will increase its capacity to 300 patients. It is used exclusively for those suffering from pulmonary disease, and very good results have been obtained there. The annual report of the Home, just issued, shows that at the city hospital and the county sanitarium there were treated during the year a total of 609 patients, of whom only eight were pay patients; 8.21 per cent. were discharged as cured, and the death-rate for the year was 16.91, the lowest since the establishment of the Home. One admirable feature of this institution is the Discharged Patients' Fund, maintained through the generosity of the directors, by means of which such persons are given pecuniary assistance until they are able to secure employment. During the year $1,021 was used for this purpose, 91 persons receiving aid in sums ranging from $34 to $5.00.

PENSIONS FOR MEDICAL OFFICERS. — The following bill has been introduced in the Legislature: Providing that any medical officer in the service of the State hospitals who may be physically disabled by reason of any injury or illness incurred in the discharge of his duties shall receive a pension. At a meeting of the New York County Medical Association held January 15th a resolution was adopted endorsing and recommending its endorsement by the New York State Medical Association and the American Medical Association, the bill introduced in the United States Senate by Senator T. C. Platt, for the purpose of giving the same status to acting assistant surgeons of the United States Army that is given to the acting assistant surgeons of the navy.

BOTANICAL GARDEN. — At the annual meeting of the corporation of the New York Botanical Garden, held January 8th, Dr. N. L. Britton, the Secretary and Director-in-Chief, reviewed in his report the work accomplished last year on the grounds and buildings of the garden in Bronx Park. The tract occupied includes 250 acres, and the number of species and varieties of vegetable life under cultivation and native to the grounds is now over 4,000. At the meeting Dr. W. Gilman Thompson was elected a manager.

PORTRAIT OF PROFESSOR METCALFE. — Dr. T. Gaillard Thomas has presented to the New York Academy of Medicine a fine portrait of Prof. John T. Metcalfe, painted by the late Jacob H. Lazarus. Since his retirement from active practice, some years ago, Dr. Metcalfe has been in the habit of spending his winters at Thomasville, Ga., and the rest of the year at Cold Spring, on the Hudson.

DISMISSAL OF A HOSPITAL HOUSE STAFF. — The entire house staff of the Metropolitan Hospital (homeopathic) on Blackwell's Island, consisting of twelve members, has been dismissed by the Commissioner of Public Charities, on account of an act of

discourtesy to the superintendent of the hospital, who had incurred the animosity of the young men.

PHILADELPHIA.

FRAUD IN EXAMINATIONS. — The State Medical Examining Board has secured evidence that the questions to be submitted to applicants for license to practise have been surreptitiously obtained in advance. It is alleged that the trouble is in the office of the State printer, but the proofs have not yet been made public. The medical council is making a rigid examination of the matter.

MORTALITY FROM PULMONARY DISEASES. — The deaths from pulmonary tuberculosis in Philadelphia during 1899 amounted to 2,818 in a total of 23,796 deaths from all causes, or 11.8 per cent. Pneumonia is credited with 2,424 deaths.

A CENTENARIAN. — Mrs. Sarah Doran Terry has recently died in Philadelphia, at the ripe age of one hundred and eight. She was of Irish descent.

Miscellany.

SYMPATHY FOR CATS.

AN interesting incident is related in the *British Medical Journal*, of the late Dr. A. C. Stark, who was recently killed by an exploding shell at Ladysmith. Dr. Stark was an ornithologist of distinction who had volunteered for service as a civilian surgeon when the war broke out. His dying words were: "Take care of my cat." It appears that his fondness for cats was almost abnormal in its intensity. The correspondent who writes of him says: "Dr. Stark's fondness for cats is a point worthy of more detailed reference, and I am permitted by two of his brothers to give the following particulars: He had often told them that he was never able to concentrate his ideas satisfactorily unless a cat were in proximity to him; and I gathered from them that, although he always had a feline companion, his feeling was, in manhood, not so much for the individual specimen as of a want of one of the species about him. Accordingly, whenever he was engaged in his favorite study, that of ornithology — or in a game of chess, of which he was very fond — he liked to have 'puss' on his knee. As a boy, even when playing exercises on the piano, he always had a cat on his knee. As an ardent naturalist he was a lover of animals generally, but his particular favorites were cats and birds, and, though friendly with dogs, he did not care for one as a companion."

HUMIDITY AND DISEASE.

THE quantity of water vapor contained in the air varies, according to the *Medical Press*, within very wide limits according to the temperature and the direction of the prevailing winds. It is, however, not so much the absolute quantity of water vapor in the air that exerts an influence on health, as the proportion in relation to the saturation point of the air; in other words, it is the degree of interference with cutaneous and respiratory evaporation that is of importance. Sudden and extreme variations in the proportion of atmospheric humidity exert a well-marked influence on the absorption, transmission and reflection of heat, light and electricity, and these variations affect in a marked degree the activity of the vital processes. According to M. Chiais, the proportion of water vapor has a pathogenic influence whenever it falls below five or six grammes per cubic metre, or rises above 12 to 13 grammes. If the air contains less than five grammes the tendency is to diseases of the congestive type and the mortality returns are increased by maladies affecting chiefly the respiratory tract, though this circumstance acts prejudicially on sufferers from chronic cardiac disease and enhances the tendency to cerebral congestion, apoplexy, etc., in the aged. If, on the other hand, the air contains more than 14 grammes per cubic metre of water, the tendency is to inflammatory affections of the intestinal tract, gastro-enteritis and the like. There is reason to believe that it is less the relative abundance of water vapor that tells than the occurrence of sudden variations, these variations placing the organism at a disadvantage, only the physiologically active being able to adapt themselves to the change.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JANUARY 13, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Typhoid fever.	Diphtheria and croup.	Measles.
New York	3,550,053	1348	429	18.90	23.17	1.15	3.71	1.75
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	—	—	—	—	—	—	—
St. Louis	622,000	—	—	—	—	—	—	—
Boston	539,416	240	56	19.06	20.16	2.10	2.94	2.10
Baltimore	506,389	182	54	10.45	18.70	1.65	5.50	.55
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	—	—	—	—	—	—	—
Washington	277,000	118	31	8.50	15.30	2.55	3.40	.85
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	82	35	31.72	28.06	3.66	2.44	9.76
Nashville	87,754	41	17	24.40	21.96	—	—	4.88
Charleston	65,165	32	5	12.5?	15.65	—	—	—
Worcester	111,732	35	9	17.16	17.16	—	—	—
Fall River	103,142	—	—	—	—	—	—	—
Cambridge	92,820	31	6	19.32	12.92	—	—	6.46
Lowell	90,114	33	12	9.09	18.18	—	—	—
New Bedford	70,511	15	5	13.33	13.33	—	—	—
Lynn	68,218	20	1	25.00	10.00	—	—	—
Somerville	64,394	19	7	15.78	42.08	—	—	10.42
Lawrence	59,072	8	7	62.50	37.50	12.50	—	—
Springfield	58,266	29	7	33.05	33.80	—	—	11 55
Holyoke	44,510	15	3	13.33	26.66	—	—	6.66
Brockton	38,759	—	—	—	—	—	—	—
Salem	37,723	14	5	7.14	—	—	—	—
Malden	36,421	—	—	—	—	—	—	—
Chelsea	34,235	15	5	53.33	—	—	—	13.33
Haverhill	32,651	9	3	11.11	22.22	—	—	—
Gloucester	31,428	12	3	15.38	—	—	—	—
Fitchburg	30,523	10	—	10.00	30.00	—	—	—
Newton	30,461	10	2	20.00	30.00	—	—	10.00
Taunton	28,527	14	4	28.56	14.28	—	—	—
Everett	28,102	8	4	25.00	—	—	—	—
Quincy	24,578	3	1	—	66.66	—	—	—
Pittsfield	23,471	7	2	—	14.28	—	—	—
Waltham	22,791	7	3	—	28.56	—	—	—
North Adams	21,583	8	—	25.00	12.50	—	—	—
Chicopee	18,316	10	3	—	—	—	—	—
Medford	17,190	4	2	50.00	25.00	—	—	25.00
Newburyport	15,636	10	—	—	10.00	—	—	—
Melrose	14,721	—	—	—	—	—	—	—

Deaths reported 2,393; under five years of age 721; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas and fevers) 486, acute lung diseases 695, consumption

250, diphtheria and croup 98, measles 38, typhoid fever 31, whooping-cough 16, diarrheal diseases 15, scarlet fever 14, erysipelas 8, cerebrospinal meningitis 7.

From whooping-cough New York 13, Providence, Lawrence and Chelsea 1 each. From diarrheal diseases New York 5, Baltimore 4, Springfield 2, Washington, Nashville and Clinton 1 each. From scarlet fever New York 6, Boston 5, Baltimore, Cambridge and New Bedford 1 each. From erysipelas New York 6, Boston and Providence 1 each. From cerebrospinal meningitis New York and Worcester 2 each, Boston, Baltimore and Washington 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,404,408, for the week ending January 6th, the death-rate was 30.9. Deaths reported 6,870: acute diseases of the respiratory organs (London) 1,221, measles 156, diphtheria 121, whooping-cough 93, fever 55, scarlet fever 40, diarrhea 34.

The death-rates ranged from 44.9 in Brighton to 12.5 in Burnley: Birmingham 27.0, Bradford 24.7, Croydon 40.5, Gateshead 17.6, Hull 22.7, Leeds 25.6, Liverpool 34.4, London 37.1, Manchester 23.8, Newcastle-on-Tyne 26.3, Nottingham 40.8, Portsmouth 32.6, Sheffield 24.2.

METEOROLOGICAL RECORD

For the week ending January 13th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		W'th'r.*		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S...7	30.22	33	43	23	77	74	76	S.W.	S.W.	6	16	C.	O.	
M...8	30.11	28	44	13	76	50	63	W.	N.W.	17	14	C.	C.	.10
T...9	30.43	19	29	9	79	69	74	N.	S.W.	9	14	C.	O.	
W..10	29.95	34	45	24	78	58	68	S.W	N.W.	15	16	O.	C.	.02
T...11	30.20	26	39	13	81	81	80	N.	E.	11	18	C.	O.	
F...12	29.61	34	39	29	91	72	82	N.	N.W.	9	11	R.	O.	1.65
S...13	30.08	29	33	25	77	80	78	N.W.	N.W.	10	6	O.	O.	
☞														1.77

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☞ Mean for week.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING JANUARY 20, 1900.

D. DICKINSON, medical director, ordered to duty as a member of the Naval Medical Examining Board, Washington Navy Yard, January 20th.

G. S. BEARDSLEY, medical director, detached from the Naval Retiring Board, Washington Navy Yard, and ordered home to await orders.

J. C. WISE, medical inspector, detached from the Naval Medical Examining Board, Washington Navy Yard, January 20th, and ordered to duty as member of the retiring board, same day.

L. G. HENEBERGER, surgeon, detached from the Naval Recruiting Rendezvous, Detroit, Mich., and ordered to the training station, Newport, R. I.

OLIVER DIEHL, surgeon, detached from the "Michigan" and ordered to the Naval Recruiting Rendezvous, Philadelphia, Pa.

A. R. ALFRED, passed assistant surgeon, detached from the New York Navy Yard and ordered to the "Texas."

F. W. OLCOTT, passed assistant surgeon, detached from the "Texas" and ordered to the Naval Recruiting Rendezvous, Detroit, Mich.

H. D. WILSON, passed assistant surgeon, ordered to duty on the "Michigan."

C. E. RIGGS, passed assistant surgeon, detached from the Naval Recruiting Rendezvous, New York, and ordered to the New York Navy Yard.

H. N. T. HARRIS, surgeon, ordered to temporary duty on the "Vermont" in connection with the crew of the "Albany."

R. SPEAR, assistant surgeon, detached from the Naval Recruiting Rendezvous, Philadelphia, Pa., and ordered to the "Constellation," temporarily.

H. A. DUNN, assistant surgeon, ordered to the Naval Proving Grounds, Indian Head, Md.

G. S. BEARDSLEY, medical director, placed on the list of retired officers of the navy from January 23, 1900.

J. M. FLINT, medical director, placed on the list of retired officers of the navy from February 7, 1900.

J. H. MCGUIGAN, pharmacist, detached from the Naval Proving Grounds, Indian Head, Md., and ordered to the New York Navy Yard.

S. ENGLANDER, pharmacist, detached from the Navy Yard, New York, and ordered to the Naval Hospital, New York.

(CHANGES BY CABLE FROM ASIATIC STATION).

D. L. WRIGHT, assistant surgeon, detached from the "Monterey" and ordered to the Isla du Luzon.

L. MORRIS, passed assistant surgeon, detached from the "Helena" and ordered to the "Brooklyn."

D. H. MORGAN, assistant surgeon, detached from the "Iris" and ordered home.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING JANUARY 18, 1900.

WERTENBAKER, C. P., passed assistant surgeon. To proceed to Greensboro, N. C., and Jessup, Ga., for special temporary duty. January 13, 1900.

LUMSDEN, L. L., assistant surgeon. Relieved from duty at Seattle, Wash., and directed to proceed to the San Francisco Quarantine Station and report to the medical officer in command for duty and assignment to quarters. January 16, 1900.

KING, W. W., assistant surgeon. To report to Surgeon L. L. WILLIAMS, Immigration Depot, New York, N. Y., for temporary duty, pending departure for Ponce, Puerto Rico. January 12, 1900.

THORNBURY, F. H., assistant surgeon. Relieved from duty at the San Francisco Quarantine and directed to proceed to San Francisco, Cal., and report to the medical officer in command for duty and assignment to quarters. January 18, 1900.

KAMUS, CARL, assistant surgeon. Relieved from duty at Havana, Cuba, and directed to proceed to Fort Stanton, N. M., and report to the medical officer in command, for duty and assignment to quarters. January 16, 1900.

STANSFIELD, H. A., assistant surgeon. Relieved from duty at San Francisco, Cal., and directed to proceed to Honolulu, Hawaii, and report to Surgeon D. A. CARMICHAEL for duty. January 17, 1900.

FOX, CARROLL, assistant surgeon. Relieved from duty at the Reedy Island Quarantine Station and directed to proceed to the Port Townsend Quarantine Station and report to the medical officer in command for duty. January 18, 1900.

TROTTER, F. E., assistant surgeon. Relieved from duty at the Tortugas Quarantine Station and directed to proceed to Havana, Cuba, and report to the quarantine officer for duty. January 16, 1900.

EDSON, E. R., assistant surgeon. Relieved from duty at St. Louis, Mo., and directed to proceed to the Reedy Island Quarantine Station and report to the medical officer in command for duty and assignment to quarters. January 17, 1900.

STEVENSON, JOHN W., acting assistant surgeon. Granted leave of absence for thirty days from January 22, 1900. January 17, 1900.

SOCIETY NOTICE.

MEDICAL SOCIETY OF THE STATE OF NEW YORK. — The ninety-fourth annual meeting of the Society will be held January 30 and 31, and February 1, 1900, in the City Hall, Albany, commencing at 9.15 A. M. on the 30th and ending at 1 P. M. on the 1st.

Communications relating to the presentation of papers or to any changes in the preliminary programme should be sent to the Business Committee: Wendell C. Phillips, Chairman, 350 Madison Ave., New York; Henry L. Elsner, Syracuse; Chauncey P. Biggs, Ithaca.

INFORMATION WANTED.

It is desired by the undersigned to investigate systematically the psychophysiology of anesthesia. For this purpose printed blanks have been prepared on which replies to certain simple questions may be written. All persons, and especially hospital surgeons, officers of medical societies and instructors in medical schools, are respectfully requested to send to the undersigned for as many of these as they care to distribute among individuals who have been under an anesthetic within a period not too long to prevent accurate recall of the facts. The blanks will be gratefully sent (and received when filled out) by George V. N. Dearborn, M.D., Physiological Laboratory, Harvard Medical School, Boston, Mass.

BOOKS AND PAMPHLETS RECEIVED.

The Diagnostic Value of Abdominal Palpation in Diseases of the Intestines. Carcinoma of the Duodenum. Hydrochloric Acid, Simple Method of Administering. By Charles D. Aaron, M.D., Detroit, Mich. Reprints. 1897-99.

Original Articles.

INTESTINAL INDIGESTION, AND ITS RELATION TO PULMONARY DISEASE.

BY CHAUNCEY REA BURR, M.D. (HARV.), PH.B. (YALE),
Assistant Surgeon, United States Navy, Puget Sound Naval Station.

UNDER normal conditions, the small intestine is practically free from micro-organisms, while the large intestine is not. The immunity of the former and the susceptibility of the latter to infection appear to be due to the difference in the reaction of the contents of the respective intestines. The chyme is normally acid in reaction and so are the feces, but the intensity of the reaction is greater in the former than in the latter. The acidity depends first on the hydrochloric acid of the gastric juice, then upon the acids normally set free in the digestion of food, as lactic acid, acetic acid, etc., and finally upon the amido and bile acids. Most of these acids are liberated in the upper part of the small intestines and naturally give their reaction to the chyme in this situation; but as the mass moves onwards away from the seat of acid liberation, the continuous admixture with the alkaline secretions of the intestines and the formation of alkaline salts modify to some extent the degree of acidity.

Along with this modified reaction, it is to be remembered that peristalsis is less in the large than in the small intestine, that greater stagnation of the contents here occurs and hence a greater opportunity for bacterial growth. Such carbohydrates, fats and proteids as have reached this situation in their native state are digested and dissolved by bacterial enzymes; the whole effect being to supplement the pancreatic process. Some form sugar from starch, some peptone from proteid, while others break up fats. But the process does not necessarily stop here. The sugar may yield to lactic acid and alcohol; the peptone to amido-acids, as leucine and tyrosine, and the evil-smelling skatol, indol and phenol; the fats to valeric acid, butyric acid, etc. It appears that ptomaines cannot be elaborated in the presence of bile or of free oxygen osmosis, which normally occurs between the blood in the mucous membrane of the canal and the intestinal contents. They need not be reckoned with, therefore, in normal digestion. But toxins do occur and, along with the other products of proteid and carbohydrate digestion, are absorbed by the portal vein, and filtering through the liver diffuse into the general circulation as innocuous and nourishing substances. The work of the investigators who have proved all this is too recent and too well known to need more than passing allusion here.

The value of a healthy liver cannot be overestimated. It is a true filter, which arrests not only micro-organisms, but ptomaines, toxins and toxalbumins in small amounts.

It is evident from this brief summary of what occurs in normal digestion, that there are two points at either one of which, if a departure from the normal occurs, auto-intoxication may result. These two points are the intestinal tract and the liver.

If from any cause indigestion occurs in the former, the small intestine from being a practically sterile tube becomes a veritable culture tube for a variety of micro-organisms. No less than fifty different species have at different times been identified in the feces passed by patients suffering from intestinal indigestion and catarrh, and the list is constantly growing. These bacteria give rise to their own toxins, ptomaines and toxalbumins, which of course pass to the liver in the portal blood along with the proteoses and other imperfect products of gastric and intestinal digestion. The result is not difficult to imagine. The liver cells are poisoned; the filter leaks. The general circulation is flooded with a variety of poisons and auto-intoxication is established.

Again, it may happen, and often does, that a person is born with what is called an "insufficient" liver, that is, a liver which is functionally weak, which often breaks down and permits of undue leakage from the portal to the hepatic vein. Fothergill says that the children of town dwellers in the second and successive generations from those who immigrated to the city from the country are apt to be so afflicted. Or the insufficiency may result from syphilis or the abuse of alcohol and various drugs. Such an individual is more prone to infection from the intestinal tract than one who has a normal liver.

Having brought a suppositious patient to the point where his system is soaked with toxins, toxalbumins and, it may be, ptomaines, it is instructive to study him still farther, and observe (1) what efforts nature makes to eliminate the poisons, and (2) what symptoms arise in the process.

There are three avenues of exit through which the blood is wont to purify itself, namely, the skin, lungs and kidneys, and the vehicles in which the elimination is accomplished are the sweat, breath and urine. If the toxemia is intense enough any or all of the eliminating organs may show signs of distress. The skin may be hard and dry, pale, or of a sodden, muddy hue; or, again, it may be cyanotic, icteroid or bronzed. Erythema, urticaria, acne, eczema and psoriasis frequently develop. In the lungs congestion, edema or pneumonia occurs, while bronchitis is common. The kidneys are congested, or, it may be, in a state of acute parenchymatous degeneration. Where the toxemia is less intense but longer continued, the changes are more chronic in character and partake of the nature of round-cell infiltration, accompanied with arteritis and hyperplasia of connective tissue. Hence arise scleroses, atrophy and fatty degenerations.

There are few, if any, of the organs of the body which escape the effects of a general toxemia, but beside the excretory organs mentioned and the liver, which has broken down early in the process, the brunt of the toxic shock seems to be expended on the nervous system and the blood. Headache, backache, labored respiration and disturbed cardiac action are concomitants of every case of auto-intoxication and indeed of every case of toxemia. Organic change occurs in the nervous system if the irritation is continued long enough. As to the blood, a condition of hemoglobinemia develops; it clots with difficulty or not at all post mortem, and extravasations and hemorrhages are common.

It is to the pulmonary side of the picture that the writer wishes to draw particular attention. In intestinal indigestion thoracic oppression is frequently complained of. Of course, tympanitic distention of the intestines may in part account for this, but the same cannot be said of Cheyne-Stokes respiration and stertorous breathing when they occur, as they sometimes do. Again in *hepatis congestio* without tympanites the same difficulty in drawing a full breath is

complained of, and if the respiratory expansion is measured, it will frequently be found to have dropped from two and a half inches to one inch. This dyspnea occurs as well when the liver is not appreciably enlarged as when it is; and even when there is a mechanical impediment to the downward movement of the diaphragm, the thoracic breathing, which should be accentuated, is less than normal. As toxic principles are present in the blood in such cases, it is fair to assume that they are not without their own influence on the respiratory apparatus, particularly as the same oppressed breathing is seen in those cases in which a toxalbumin is known to be present in the circulation. Such cases are anthrax, hydrophobia, serpent bite and even exophthalmic goitre, as well as most of the infectious diseases. The medulla oblongata and the nerves issuing therefrom seem to be specifically poisoned by toxalbumins. One of these nerves is the pneumogastric, and it is to be noted that its deep origin is intimately associated with the respiratory centre. It is not without significance that so many of the toxemias are accompanied with a weak, hoarse voice. The laryngoscope reveals a condition of paresis of the glottis, and the larynx, as is well known, is supplied by branches of the pneumogastric nerve. In the early stages of phthisis, long before tubercular laryngitis occurs, there is a characteristic laryngoscopic picture. At the last meeting of the American Climatological Association, speaker after speaker rose up to testify as to the constancy with which this picture was observed.[1] Roe described it as anemia of the larynx, Ingalls as atrophy of the larynx, Langmaid as paresis of the glottis. The muscles and vessels stand out with unusual prominence through the pallid mucous membrane. However produced, there is but little doubt that the nerve supply is involved to a greater or less extent. Moreover, tuberculin, itself a toxalbumin, will produce this result, for Langmaid told how, in the early days of the tuberculin test, a number of his patients at the Massachusetts General Hospital were, unknown to him, treated with tuberculin, and it was the remarkable laryngoscopic picture which they subsequently presented which led him to ask for an explanation.

Evidence of a similar kind as to the respiratory insufficiency of incipient phthisis is afforded by Litten's diaphragm phenomenon[2] and thoracic x-ray examinations.[3] Only here it is a phrenic breakdown and not a pneumogastric which is proved. For both these observers have found that there is a shortened excursion of the diaphragm on the affected side, long before the B. tuberculosis can be demonstrated. Whether the inhibition occurs by way of the respiratory centre or is the result of a true phrenic neuritis does not appear. But the fact seems to be proved, as the writer some time ago pointed out,[4] that in pulmonary tuberculosis a paresis of both the phrenic and pneumogastric nerves occurs.

The truth of the matter seems to be that many toxalbumins as well as toxins and ptomaines, whether introduced by the venom of a snake-bite, the fangs of a mad dog, the excretions and secretions of bacteria, or the absorption of these, as well as of poisonous proteoses from the intestinal tract or elsewhere, may all embarrass the respiration. The downward excursion of the diaphragm is shortened, to say nothing of the lessened expansion of the thorax. Certain results must follow such a condition. The diaphragm acts as the piston of a syringe, filling the pulmonary capillaries with venous blood on its down stroke and emptying them on its up stroke. When its movement is interfered with, the capillaries are not emptied and a condition of stasis ensues. Under normal conditions the venous blood of the lungs is loaded with excrementitious principles. The aqueous extract of vapors exhaled by dogs has been found to cause death within twenty-four hours when injected into the veins of other animals. How much greater then is the danger in the static lung when these same principles remain for an indefinite period in contact with the walls of its fragile capillaries! One of the effects of such stasis is to weaken, if not paralyze, the epithelial cells of the pulmonary alveoli, and the endothelial cells of the capillaries, so that they no longer efficiently exercise their prerogative of phagocytosis. When the ciliated epithelium of the respiratory tract is in a condition of functional activity, it is inconceivable that either spores or bacilli drawn in with the inspired air can long remain in contact with the pulmonary epithelium; they are hustled out the way they came. But if for any reason this should not be the case, the epithelial cells of the pulmonary alveoli, or *macrophagi*, as Metschnikoff calls them, have still the power of killing and digesting them. It is only when these cells are poisoned or otherwise paralyzed that the power departs from them. The lungs are then open to microbic infection from without.

On the other hand, there is serious danger of microbic infection from within. Fraenkel reports a case[5] of a young man convalescing from typhoid fever, who in the fifth week after defervescence developed a new rise of temperature. An area of dulness was found posteriorly, and a needle thrust through the chest wall at this point drew off reddish pus. Later a serofibrinous exudate formed there. From both of these pure cultures of the typhoid bacillus were obtained. The facts seem to warrant the conclusion that the typhoid bacillus in this case made its way from an infected intestine, through a paretic liver into the general circulation, and thence to its final resting place and brood-oven in a pulmonary capillary. Even then the endothelial cells of the neighborhood might have exerted their phagocytic powers had they not been put to sleep by the same lethal dose which prostrated the epithelial cells of the pulmonary alveoli. So that without and within the lungs have been opened to infection.

The supposititious patient, therefore, who in the beginning was suffering simply from intestinal indigestion, has been brought to such a pass by the absorption from his intestinal tract of poisonous proteoses and ptomaines, that microbic infection of the lungs has not only been rendered possible, but has actually occurred. It is unnecessary at this stage of the investigation to limit the attention to any particular bacterium, for the least that any of the pathogenic variety can do is to initiate inflammation, and the most, to produce coagulation necrosis.

With the establishment of pulmonary foci of infection, the bacteria get to work, and the structural alterations of tissue which ensue are the same here as else

[1] Sanitarian, July, 1899.
[2] Cabot: Medical News, April 15, 1899.
[3] Williams: Sanitarian, July, 1899.
[4] The Tuberculous Diathesis, etc. Boston Medical and Surgical Journal, November 25, 1897.
[5] Medical News, April 15, 1899.

where. There is first diapedesis of the leucocytes and a leakage into the tissues of highly albuminous plasma, which from the presence of so many leucocytes has an inherent tendency to clot. The wandering cells of the connective tissue hurry to the support of the leucocytes and soon the "battle of the cells" is on. Exudation continues and the pressure in the infected area increases, so that this alone may result in much cellular death. The excreta of the bacteria — ptomaines, toxins, etc. — combined with this pressure is enough to account for the appearance of coagulation necrosis, which of course means cellular death in the tissue cells of the part. By means of proteolytic enzymes, which all bacteria capable of inducing inflammation seem to secrete, the necrosed area is digested and dissolved and pus is, in consequence, formed.

From the fact that coagulation necrosis in croupous pneumonia is limited to the epithelial lining of the alveoli, it would appear that in this disease, the primary infection occurs in the epithelial cells, that is, the bacteria are inhaled. The clotted exudate lies in the alveoli and thus produces less pressure than if it were beneath the surface.

For the same reason, the coagulation necrosis of pulmonary tuberculosis argues for a different avenue of infection. Here it is the capillary network of the lung which is attached. The exudate occurs outside the alveoli, and consequently the pressure is greater and coagulation necrosis possible. The bacteria therefore are brought to the capillaries by way of the general circulation, and in many instances are undoubtedly to be sought for in an infected intestine.

Buchner[6] demonstrated in 1890 that the serum of healthy blood has a germicidal action of its own. As a result of his investigations he concluded that the active element in this phenomenon is a living albumin, an essential constituent of which is sodium chloride, and which, when robbed of this salt either by dialysis or dilution, becomes inert in its behavior toward bacteria.

In pneumonia, as is well known, the chlorides disappear from the urine, and are locked up in the pneumonic exudate. Here they remain till resolution occurs. It can scarcely be doubted, therefore, that they perform a use, and probably a vital one, as in inflammations elsewhere the same paucity of chlorides in the urine is observed. It is to be noted also that with the reappearance of the urinary chlorides peptones appear as well. The digestion of the pneumonic exudate has preceded the peptonuria, and it may well be that sodium chloride has in some way assisted the peptonizing process.

With these facts before one, it would seem as if some changes might be made to advantage in the traditional treatment of pneumonia and pulmonary tuberculosis. In all cases of pulmonary congestion and inflammation the greatest care should be given to the condition of the digestive tract. The intestines should not only be evacuated and disinfected, but should be encouraged to resume their normal functions of digestion and absorption. For this purpose intestinal alteratives are indicated, and of these none stand the test of use better than calomel and podophyllin. Albers states that while many bacteria in the intestinal contents are readily passed in the stools, others remain behind in the intestinal glands and follicles, where being protected by a film of mucus, they cannot be reached by ordinary intestinal antiseptics. Yet these are the bacteria which are the first to give up for absorption their chemical products and which it is the most desirable to destroy.[7] Small and repeated doses of these substances after the manner used in the Woodbridge treatment of typhoid fever fulfil these indications. Three, four or five movements of the bowels per diem in pneumonia will tend to do more good than harm. The addition of such drugs as salol, carbolic acid, salicylic acid, menthol, thymol, etc. is of doubtful benefit. For whereas they disinfect the contents of the intestines, many of them are soluble, and once absorbed have a toxic power of their own, and depress the heart in particular. Under such treatment, if judiciously applied, the intestines and liver resume their functions. An adjunct of great value is the inhalation or ingestion of oxygen. It will be remembered that where oxygen osmosis occurs, the formation of ptomaines seems to be prevented and this is as true of the vessels in the intestines as in the lungs. Again the use of calomel and podophyllin, by stimulating the liver and its urea-excreting function, acts upon the kidneys, and diuresis is encouraged. Thus the blood unloads itself of excrementitious matters. The wet pack is useful for the same reason.

In pneumonia two stages should be distinctly recognized, as indeed they generally are. In the first stage there is hyperemia of the pulmonary capillaries, diapedesis of the leucocytes and the exudation into the pulmonary alveoli of a viscid, albuminous plasma. Obviously much good could now be done if an astringent could be employed which had the power of contracting the pulmonary capillaries and so aborting the process. The soluble phosphate of iron has this power if used in small and repeated doses, and the addition of tincture of aconite seems to increase its powers. The writer has repeatedly aborted the pneumonic process at this stage and by this means alone after the previous administration of a purge. It is otherwise, however, when hepatization has occurred. The path to recovery here lies through resolution or the digestion of the pneumonic exudate. The process can be hastened to some extent by the administration of sodium chloride and pancreatin. The ideal way to administer this is to add a few grains of pancreatin to a pint of normal salt solution and inject it well up into the sigmoid flexure.

The recent work of Krönig and Paul[8] throws some light on the way in which sodium chloride acts in septic blood states. It seems that when salts are dissolved in water, they undergo an electrolytic dissociation into metallic and acidic *ions*, the former being the electropositive *cation*, the latter the electronegative *anion*; sodium chloride, for example, resolving itself into its sodium, or *metal-ion*, and its chlorine, or *acidic-ion*. The germicidal value of a metallic salt depends not only upon its specific character, but also upon that of its *anion*, which in the case of sodium chloride is chlorine. Solutions of sodium chloride, therefore, entering the circulation, are dissociated into sodium and chlorine, of which the sodium unites with the carbon dioxide present to form sodium carbonate and bicarbonate and thus assist in maintaining the alkalinity of the blood, while the chlorine unites with the bacteria themselves or with any free hydrogen present to form hydrochloric acid and in

[6] Archiv für Hygiene, Bd. x, H. 1 und 2.

[7] American System of Practical Medicine, Loomis-Thompson, vol. iii, p. 222.

[8] Zeitschrift für Hygiene und Infectionskrankheiten, 1897, Bd. xxv, S. 1-112.

either event exerts an antiseptic influence at the seat of inflammation.

Bovee says[9] the presence of sodium chloride in the blood favors osmosis and retards coagulation. These of course are desirable effects in the first stage of pneumonia, but he also warns us that the salt if present in excess gives rise to pulmonary edema, dyspnea, headache, vertigo, mental excitement or delirium and severe pain in the left side.

The pancreatin is added in the hope that it may assist in the digestion of the pulmonary exudate, and in the conversion of any primary or secondary proteoses that may be present into peptones. These proteoses result not only from imperfect proteid digestion in the alimentary tract, but from the action of bacterial enzymes on the necrosed tissues of the infected part. Both proteoses and peptones are toxic if free in the circulation, but the diffusibility of the latter is much greater than the former and hence it happens that peptones will leave the blood in the urine, while proteoses remain behind.

Lolu and Emmerich have shown[10] that the enzymes of certain diseases kill not only their parent germs, but also those of cholera, typhoid fever, anthrax, diphtheria, black plague, staphylococci and, probably, gonococci. The bacillus of tuberculosis seems incapable of producing an enzyme that is fatal to itself. This is also true of black plague, and for this reason, say these investigators, the antitoxin of black plague has failed to cure. This hint should not be lost, and it is earnestly to be desired that experiments should be instituted as to the effect of pancreatin on the growth of the bacillus tuberculosis.

Fresh air and the cure of intestinal indigestion will do much to improve the condition of those suffering from pulmonary tuberculosis, and, if begun early enough, a cure may be looked for in a certain proportion of cases. The use of normal salt solution is also to be recommended.

The writer can never forget the extraordinary improvement which once followed his use of a sodium-chloride solution in a case of this kind. The patient was far gone in consumption and had been under observation for many months. One morning the word came that he was dying, and on arrival at the bedside it seemed indeed as if dissolution were at hand. There was great dyspnea, the face was pale and bathed in a cold sweat, the pupils were dilated, the pulse fluttering and almost imperceptible and the temperature 101° F. About three grains of sodium chloride were dissolved in a teaspoonful of boiled water and this was injected under the skin. In a few moments it seemed as if the breathing were easier. At the end of half an hour there was no doubt of it, and in addition the pallor and cold sweat had gone; the pupils were normal in size, the pulse was regular and perceptible and the temperature had dropped from 101° to 100° F.

This patient lived some months longer, but never again had such an attack, and the breathing was comparatively free to the end. The daily use of salted milk or beer had probably much to do with this.

BEQUEST TO A HOSPITAL. — The Flower Hospital, New York, has recently received $200,000 from the family of the late Roswell P. Flower.

[9] New York Medical News, December 24, 1898.
[10] Sanitarian, August, 1899.

CASES OF CHOLECYSTOTOMY.

BY EDGAR GARCEAU, M.D., BOSTON,
Surgeon to Out-Patients in the Free Hospital for Women, and in St. Elizabeth's Hospital, Boston.

CASE I. The patient was a married woman, thirty-eight years old, who had never been pregnant. She had always enjoyed good health except during the two years previous to her operation. During this time she had complained of some indigestion and occasional cramps in the region of the epigastrium, which lasted a few minutes at a time; but there had never been any severe attack of colic like the one from which she was suffering when first seen. The history of the attack was that of a sudden sharp pain localized in the region of the epigastrium and also felt in the right hypochondrium just below the ribs. It was penetrating, knife-like, and extended to the right iliac region. There was also slight jaundice, as evidenced by the color of the skin and the bile found in the urine. She was quite prostrated and confined to her bed.

A catheterized specimen of urine showed four per cent. of urea, a few leucocytes, a little blood and a few small granular casts. On examination of the patient, resistance and tenderness were found over the gall-bladder, and likewise over McBurney's point, but no tumor was felt. The temperature was 101° F.

She was treated palliatively for a short while until the pain and tenderness had subsided, and when this happened the operation was performed. The diagnosis of biliary calculi seemed probable, but that appendicitis also did not exist could not be asserted. The incision was therefore made midway between the ribs and Poupart's ligament in order to allow of an examination of the appendix. It was found that the appendix was the seat of inflammation and it was removed. The incision was now extended upwards toward the ribs and the gall-bladder exposed. It was contracted and small. In it was a little thick, brownish fluid and fifteen calculi of various sizes. After removing these, the open gall-bladder was sewed to the upper end of the incision and a drain inserted. One stone was left in the bottom of the gall-bladder, as it could not be easily removed. No forcible attempts were made to remove it on account of the fear of hemorrhage, so serious in these cases. The gall-bladder was washed out twice daily after the operation, but the stone never appeared; it probably still remains in the gall-bladder, or has been passed through the cystic duct, in which it seemed to be firmly impacted.

The patient rallied well after the operation. The fistula closed in about three weeks, during which time bile was discharged in varying quantity, never in very large amount. When last seen, in November, 1899, ten months after operation, she was well, with the exception that occasionally she had had some slight pain in the right lumbar region which radiated to the front, but it had never been severe and she considered herself cured. The general health was excellent and all the bodily functions were acting properly.

A recurrence of symptoms must be looked for in this case, it is feared. The co-existence of appendicitis is interesting, and when it is remembered that the pain in appendicitis may be felt in almost any part of the abdomen, there was ground for believing that the case might well have been one of appendicitis with catarrhal jaundice. Before the incision was made there was doubt as to whether the operation

was to be for appendicitis or for removal of biliary calculi. If there had been a tumor in the region of the gall-bladder the diagnosis would have been more certain with reference to the gall-bladder. Localized tenderness over both gall-bladder and appendix was the deciding physical sign which called for exploration of both.

Case II. The patient was a married woman, forty-eight years old, who had been suffering from symptoms of indigestion for a period of twelve months before her operation. There had been a gradual decline in the general health and strength and she was finally reduced to a condition of extreme emaciation and weakness. Intense jaundice, the onset of which had been gradual, had been present during six months. The stools were clay-colored. Occasional pain of mild severity was complained of in the *left hypochondriac region*, just to the left of the stomach, and there never had been any distress or pain in the *region of the gall-bladder*. There had been no vomiting and there was no history of biliary colic. Examination was entirely negative, with the exception that there was some tenderness on pressure over the stomach in the epigastric region. The gall-bladder was not distended and pressure over it elicited no tenderness, nor even resistance of the abdominal muscles. No tumor could be felt anywhere.

The case when first seen, in June, 1899, was looked upon as one of carcinoma of the stomach with secondary invasion of the liver, and an unfavorable prognosis was given. But during the summer the patient gained five pounds. This improvement, considered with the atypical group of symptoms, suggested that an exploratory incision be made, in the hope that the jaundice might be caused by remediable calculous obstruction of the bile-ducts. In any event a positive diagnosis could be made by opening the abdomen.

The operation was performed in September, 1899. A crucial incision was made below the tenth rib, exposing the gall-bladder. It was small and firmly adherent by its upper surface throughout its whole length to the under surface of the liver. A small amount of yellow, glairy fluid was aspirated from it; after incising it, six calculi from two to three centimetres in diameter were removed with a pair of dressing forceps. There was some hemorrhage while removing these small stones, but it was not considerable. The finger discovered another stone in the bottom of the gall-bladder, but it could not be dislodged. Rather forcible effort was made with the forceps to remove it, when an abundant venous hemorrhage occurred. The gall-bladder was at once firmly packed with gauze, which controlled the hemorrhage, and the incised sac was sewed to the upper angle of the incision; the lower part of it, however, could not be approximated to the peritoneum on account of the tenseness of the abdominal walls. A gauze packing was therefore placed in front of the gall-bladder to serve as a drain, and the rest of the incision closed. She rallied well under stimulants and an hour after she was put to bed, the pulse was 75 and of good strength. In the evening the pulse failed suddenly and she rapidly died.

At the autopsy the abdominal cavity was found filled with blood clots. The blood had escaped from the gall-bladder, spilling over the edge of it into the peritoneal cavity. The liver, stomach, pancreas and duodenum were removed from the body in one mass and a careful dissection made. The hemorrhage was found to have proceeded from the very vascular walls of the gall-bladder. A very large stone weighing 130 grains was found at the bottom of the gall-bladder. It measured one and one-fourth inches in length and an inch in width.

The relations of the gall-bladder and the ducts were as follows: The common duct divided at the usual point. The left hepatic duct went to the left lobe of the liver in the normal way. The right hepatic duct was one and one-half inches long, and entered at once into a cavity formed by the lower part of the gall-bladder, in which lay the stone; there was no cystic duct whatever, and on the upper surface of the cavity were several biliary canals entering directly into the substance of the liver. It is possible that the stone in its passage downwards dilated the cystic duct and also the upper part of the right hepatic duct in such a way that both were transformed into a single cavity; subsequent inflammatory changes may have caused adhesions between the upper part of the thus newly-formed sac and the under surface of the liver. There was a constriction about the end of the stone facing the gall-bladder which prevented its extraction, and there was also a vascular band running from side to side of the gall-bladder directly over the stone and further rendering extraction a difficult if not an impossible matter. To have cut this band would have meant a serious hemorrhage. To have excised the gall-bladder in the usual way was impossible as there was no pedicle. To have cut it out would have also meant serious hemorrhage, and sewing the edges together would have been, in this case, a most difficult matter, and in the reduced state of health of the patient, unwarranted. It is possible that the hemorrhage might have been better controlled by sewing up the incision in the gall-bladder. This would have meant a subsequent operation at the end of a few days, when, however, the same conditions would have been encountered. One other method was open to trial for removal of the stone in case hemorrhage had not been met with. It would be possible, in a similar case, to split the gall-bladder down to the common duct, and so remove a stone; but in this case it probably would have given rise to much more serious hemorrhage than that which occurred, owing to the extreme vascularity of the walls.

Case III. The patient was a man of vigorous constitution, seventy-two years of age. He was of short stature, but thick-set and strong. His health had always been good with the exception of attacks of biliary colic, which had come at frequent intervals during several years preceding his operation. During these attacks pain in the right hypochondriac region was severe, and he usually had to take to his bed. Jaundice, during the attacks, was inconstant. There was indigestion at times, but except for this his general health was excellent, and he was able to work at his trade, that of shoemaking, without interruption. During his last attack of colic the pain was very severe, confined to the region of the gall-bladder, and very prostrating. Large doses of morphia were required to control it. Jaundice was marked and the stools were clay-colored. There was no tumor.

The operation was performed on September 20, 1897. A triangular incision was made over the gall-bladder and that organ exposed. It was found moderately distended with normal bile, but there was no

stone in it. Examination of the ducts with the forefinger revealed a hard mass in the region of the head of the pancreas. An attempt was made to explore it further with the hope of removing it, but at this point of the operation breathing became somewhat embarrassed and the pulse flagged. Added to this was the difficulty of performing an operation of this nature on an old man with thick abdominal walls. It was therefore thought advisable to make an anastomosis between the gall-bladder and the transverse colon. This was quickly done with the Murphy button, the smallest-sized one being used. The button was passed on the fourteenth day. Convalescence was complicated by a severe attack of catarrhal pneumonia affecting the right lung, and the patient nearly died from the effects of this and the shock of the operation. He finally recovered, however, without further accident.

He was last seen in November, 1899, two years after the operation. His health was perfect. He had never had a pain since the operation. Digestion was good and in every way he was in a normal condition.

The case illustrates the great value of the Murphy button in an emergency of the nature described. The time consumed in adjusting the button was very short, and the result good. It is a question whether the stone has since been passed or whether the artificial passage between the gall-bladder and the large intestine is still serving as a passage for the bile.

SOME POINTS SUGGESTED BY THE CLINICAL STUDY IN ONE HUNDRED AND EIGHTY-SIX CASES OF VALVULAR HEART DISEASE.[1]

BY RICHARD C. CABOT, M.D., BOSTON,
Physician to Out-Patients, Massachusetts General Hospital.

I. METHOD OF RECORDING.

ANY one who tries to record statistically a considerable number of cases of any one disease soon meets the following difficulty: Almost any form of chart in which the symptoms are arranged up and down and the patient's numbers across the top (or *vice versa*) soon grows so large as to be unmanageable; the eye grows confused in following the columns, and mistakes easily occur. It is also difficult to get a satisfactory material such as will resist wear and tear.

In recording the cases of which my paper of to-night is a study I have used a book in which points regarding etiology, symptomatology and physical signs are written in a column at the left margin of the first sheet of the book. Then all the other sheets in the book are cut off along their free margin to such an extent that as each fresh page is turned over for the recording of additional cases, it comes in close juxtaposition to without covering the printed column of data in regard to which we are collecting statistics. In this way a series of cases, even up to several hundred, can be recorded in a single book without any of the inconvenience which soon meets us with any form of chart with which I am acquainted, as soon as we get beyond 30 or 40 cases. To record any given point in regard to etiology, symptoms or signs, we need with this book only so much time as is required to make a plus sign or a zero mark opposite the proper word in the printed column which is always visible and close at hand, owing to the arrangement of the book. I usually stamp a diagram of the front and back of the chest into each record and draw out the areas of the murmurs heard, marking their seat of maximum intensity, as well as the area of the heart.

[1] Read at a meeting of the Boston Society for Medical Improvement, November 20, 1899.

II. THE APEX BEAT.

(*a*) When we speak of localizing the apex beat of the heart in order to ascertain the size of the organ, what do we mean, and what ought we to mean? It is well known that it is not the apex of the heart which gives rise to the so-called "apex beat," or cardiac impulse. The impulse is caused by a portion of the right ventricle. In localizing the maximum impulse, therefore, we are not localizing the apex of the heart. What then *shall* we look for? It has been my practice to give the name of "apex beat" to that portion of the chest wall farthest to the left and farthest down at which any rise and fall synchronous with the heart beat can be felt. This is often some distance outside of the *maximum impulse*, and it might easily be objected that what we are localizing by the method here suggested may be simply the outer limit of a *wave* transmitted to the chest wall by the heart. In deciding this question, the evidence of percussion seems to me of great value, and it has been my uniform experience that the percussion dulness begins not at the point where the maximum cardiac impulse is to be seen and felt, but some distance farther out towards the left axilla and farther down towards the base of the chest, in a position corresponding to the lowest and outermost point at which *any* pulsation even very faint, can be felt.

(*b*) In defining the apex beat, one should be careful so to frame his definition as to include those cases (not at all infrequent in my experience) in which we have a systolic *retraction* at the apex instead of a systolic *impulse*; for I need not remind you that the presence of a systolic retraction at the apex is in no way diagnostic of pericardial adhesion, but is often due simply to the negative pressure produced within the chest by the powerful contractions of a hypertrophied heart.

III. THE PLACE OF MAXIMUM INTENSITY FOR AORTIC REGURGITANT MURMURS.

Modern text-books on diseases of the heart and on physical diagnosis are beginning to correct the old misstatements handed down through many of the older books regarding the point at which the aortic regurgitant murmurs are best heard; yet in the "Twentieth Century Practice of Medicine," Whittaker stated in 1895 (Vol. IV, p. 251), "The murmur is heard in greatest intensity in the second interspace to the right of the sternum."

Musser, in his "Medical Diagnosis," page 382, gives three positions, at any one of which the murmur of the aortic regurgitation may be at its maximum. One of these is in the second right interspace and two are in the middle line of the sternum, at different levels. On page 380, he says, "When a murmur is heard with greatest intensity in the second right interspace, it is usually generated at the aortic orifice." On page 429, he admits that "in some instances, the maximum of intensity is greatest at the fourth left costal cartilage, or even at the apex."

Tyson, in his "Physical Diagnosis," page 136, says, "It is sometimes loudest in the aortic area but often

over the mid-sternum, and it is even well heard as low as the ensiform cartilage or at the apex itself."

Osler, in the last edition of his "Practice," page 713, says, "On auscultation, there is heard a murmur, during diastole, in the second right interspace, which is propagated with intensity towards the ensiform cartilage, or down the left margin of the sternum towards the apex."

These statements are a considerable improvement over those of the older text-books, in which the occurrence of aortic murmurs with maximum to the left of the sternum is hardly mentioned, but I do not think that even the statements just quoted give a true idea of the facts, for they seem to suggest that the right side of the sternum is the *common* place to hear the murmur best, and the left side the *rarer* place. In 44 cases which I have carefully examined this summer with reference to this point the murmur was best heard to the left of the sternum in 36; best heard to the right of the sternum in four cases; in the centre of the sternum in two cases; while in two more there were two areas of equal intensity, one at the right and one at the left of the sternum; while over the sternum itself, the murmur was very feeble. In this series, which I believe to be a typical one, the murmur was best heard to the right of the sternum in only four out of 44 cases, or less than one-tenth.

IV.

My fourth point I want to put simply in the form of a question: Upon what evidence should we base the diagnosis of aortic stenosis? Knowing, as we do, that a loud systolic murmur in the traditional aortic area may be produced by simple roughening of the aortic valves or the aorta itself, without any genuine stenosis, and that this murmur may be propagated into the great vessels, what positive signs have we for distinguishing aortic roughening from aortic stenosis? Is the presence of a tactile thrill, in addition to the signs just mentioned, sufficient to warrant in making the diagnosis of mitral stenosis, or do we need in addition the *pulsus tardus, rarus, parvus* of the classic descriptions?

V. RELATIONS BETWEEN THE VALVE LESIONS AND HYPERTROPHY.

The study of the 186 cases of this series has given me, I think, reason to deny that there is any one form of valve lesion which is constantly associated with the clinical evidence either of hypertrophy or of the lack of hypertrophy of either ventricle. The classical text-book statements, that in pure mitral stenosis we have no hypertrophy of the left ventricle; that in mitral regurgitation evidence of a predominant or exclusive enlargement of the right ventricle can be made out; that in aortic regurgitation the left ventricle must be enlarged, all these seem to me contrary to the facts of observation. I have seen several cases of well-marked aortic regurgitation without any evidence of hypertrophy of the left ventricle, and several of apparently pure mitral stenosis in which there was every reason to suppose that the left ventricle was enlarged, while in a majority of cases of mitral regurgitation such enlargement of the heart as could be demonstrated seemed to affect the left ventricle rather than the right. In connection with this, I would like to call attention to the worthlessness of epigastric pulsation as evidence of hypertrophy of the right ventricle. Surely we have all seen it present when the heart was normal, both during life and at autopsy, and, on the other hand, seen convincing evidence of hypertrophy of the right ventricle without any epigastric pulsation.

VI. PRESYSTOLIC MURMURS IN CONNECTION WITH AORTIC REGURGITATION.

It is a well-known fact, first described by Austin Flint in 1862, that we may have every physical sign of mitral stenosis, and yet at autopsy find the mitral valve normal in cases where there is an associated regurgitation through the aortic valve. I mention this fact simply to call attention to two points: (*a*) First, that unless we always have it in mind and are closely on the lookout for it, we may altogether overlook the aortic lesion. In certain cases the diastolic murmur is very faint and the presystolic roll and thrill at the apex impress themselves upon one's mind to the exclusion of everything else. The importance of not making this mistake, that is, the importance of recognizing a faint diastolic murmur in the presence of a loud presystolic roll and thrill, is that the prognosis of a combined lesion of both the aortic and mitral valves gives a much worse prognosis than a lesion of the mitral valve alone. (*b*) Second, I want to ask if any one here present can tell me whether it is ever justifiable to make a diagnosis of mitral stenosis in a case where *we are sure there is aortic regurgitation*. Is there any way, in such a case, in which we can tell the Austin Flint murmur from the murmur due to organic changes in the mitral valve?

EPILEPSY.[1]

BY WALTER E. PAUL, M.D., BOSTON,
Assistant Physician in Diseases of the Nervous System, Massachusetts General Hospital.

The symptom complex of epilepsy falls within the experience of every physician, and the diagnosis, prognosis and treatment of this affection are most important from the practical standpoint. The class of cases here considered belongs to so-called idiopathic epilepsy, and not to the cases in which the convulsive attacks are symptomatic. For although in many cases of epilepsy pathological cerebral changes have been found, by no means is there associated with epilepsy any constant pathology. Further study of epilepsy may demonstrate a uniform etiology, but if due principally to a disordered function of conducting paths, the etiology would vary widely in individual cases, and might well be beyond discovery. Féré[2] says of epilepsy, that "the most varied causes produce the same clinical phenomena."

In a general way it seems unlikely that a special toxin or class of toxins is solely, or even in large measure, the one factor causing epileptic seizures. It is reasonable to grant that all of the human kind elaborate the same chemical substances in the economy and that the central nervous system of every individual is subjected to practically the same metabolic processes and products. But there is a wide variation in neural endowment. Is not the cause of epilepsy almost absolutely in the machinery of the brain and cord — a vice of the nerve tissues, a limited

[1] Read at a meeting of the Boston Society for Medical Improvement, November 20, 1899.
[2] Féré: Twentieth Century Practice, vol. x, p. 586.

capacity to meet all nerve stimuli and retain normal nerve equilibrium? From this point of view every nerve reaction that occurs in the life of an epileptic bears a relation to the culminating symptom of the fit. It is not simply the influence of leucomaines, but other events in the bodily and intellectual life are contributing mites, some against, but more for, the developing attack.

In epileptiform fits that are symptomatic of gross lesions there is a variety of specially prominent factors, as, for example, in cases due to syphilis, or the presence of a foreign body in the brain, or tumor, or alcohol. It is worthy of remark that Gowers[3] inclines to the opinion, though he does not dogmatically state it, that convulsive attacks in a syphilitic are not attributable to the virus in the blood but to a lesion of nerve tissues. This probability is reinforced when we remember the comparative rarity of convulsions in syphilitics. Therefore, in idiopathic epilepsy the autotoxic theory seems to me to occupy a small place in the etiology.

Diagnosis. — The diagnosis of epilepsy is simple in many cases, but in the milder attacks it may require much study and observation to determine the character of the symptoms. For some time the mildest attacks may pass unrecognized; in which, for example, one pauses a moment in whatever he is doing, ceases speaking, or drops some object from the hand, or has a transitory giddiness. Night attacks may be discovered only by accident, and Trousseau records a case in which the first knowledge of nocturnal epilepsy was brought to light by a dislocation of the shoulder. The principal difficulty in diagnosis is to differentiate between epilepsy and hysterical convulsions, and it may be impossible to determine from the history whether only one is present or both, for hysteria may be superimposed on true epilepsy. When there is doubt it is perhaps unwise to rule out epilepsy even on the apparently typical hysterical character of an individual fit. The subsequent and previous attacks might well be epileptic, yet the patient's observation and that of his family and friends would regard all attacks of the same character. If the attack is of abrupt onset, and there is loss of consciousness, if the tongue, lips or cheeks are bitten, or there is some escape of saliva, even a slight drooling, and the urine is passed in the attack, and if these symptoms are followed by a period of stupor or confusion of thought, then a positive diagnosis of epilepsy is established. The occurrence of some bodily injury is strong corroborative evidence of true epilepsy, be it a burn, a cut or a broken bone. Even without a clear, assured history of an epileptic fit, it is wise in directing treatment to regard the patient as a probable epileptic rather than as simply hysterical. Amelioration under treatment would only strengthen the suspicion of epilepsy.

So-called psychic epilepsy presents an unusual variety of the disease. Motor symptoms are replaced by impulses and ideas that may impel the individual to various acts. No memory of these is retained. The defence in murder trials not infrequently resorts to this explanation of the homicide.

Prognosis. — Prognosis deals with grand mal and petit mal cases. Perhaps the three following are the most important considerations: (1) What can be expected from treatment? (2) How does the existence of epilepsy affect longevity? (3) What is the future of an epileptic in his relation to society and the state?

According to the statistics, a large proportion, 80 to 90 per cent., of epileptics are helped by treatment. The attacks are lessened both in severity and frequency, and in favorable cases cease for long periods.

As to cure, I quote Dr. Edgar J. Spratling:[4] "A very small percentage do recover; but a new onset of the disease is a fate hanging immediately over every former sufferer. Simply because a man goes an indefinite period without a convulsion should not induce us to state epilepsy with him in the future is impossible or even improbable." It seems justifiable to hold out to a patient the expectation of improvement.

The influence of epilepsy on life is in most textbooks referred to as of small moment. Dr. Worcester,[5] of Danvers, has demonstrated that in asylums for the insane epilepsy in its severe forms is a deadly disease, with a mortality of 19.23 per cent. due directly to the disease.

The development of rapidly-recurring convulsions, the status epilepticus, is cause for gravest apprehension. At any moment, however, the attacks may cease, and the patient recover.

The relation of an epileptic to society and the state is by no mean a simple problem. Few occupations are especially fitted for epileptics; few employers welcome the epileptic employé. An attempt to secure work for one of the afflicted is often discouraging, and if the fact that one is epileptic is discovered after being engaged as a workman, the employer feels he has been deceived. It is easy to see how society is steadily forcing an epileptic into the discouraged and shiftless class. Thus the epileptic condition may be aggravated and the individual finally become a ward of the state.

Treatment. — To the treatment of epilepsy a great deal of study has been devoted. Few diseases have had more drugs and measures directed to amelioration or cure; and epileptics are attracted in large numbers by quacks. Original methods and schemes of treatment have been proclaimed by enthusiasts, but no panacea is yet known. In spite of all the discouragements to a positive cure a great deal is being done for the amelioration of epilepsy.

Treatment includes hygiene, diet, palliative measures, drugs, surgical measures and hospital life. I have reviewed the treatment of the cases coming to the Out-Patient Department of the Massachusetts General Hospital for 1896, and the results are embodied in what follows. Each patient is ordered to take a daily sponge bath, observe regular habits, avoid excesses and vices, and take sufficient exercise out of doors. Caution as to occupation was given in a few cases, for in most epileptics risks have to be taken and excessive caution is to be avoided. Meat is uniformly prohibited hospital patients, but eggs, fish and milk are allowed and urged. These directions are insisted on for Thanksgiving and Christmas Days as well as others. Caution against overeating is given, and an attempt is made to maintain the health of the alimentary tract — a most important consideration, as an error in diet frequently precedes an attack. Refraction, phimosis, nasal obstructions and aural dis-

[3] Gowers: Epilepsy and Other Chronic Convulsive Diseases, pp. 26-27.

[4] Spratling, Edgar J.: Journal of Nervous and Mental Diseases, May, 1899, p. 297.

[5] Worcester: Medical Record, April 28, 1898, p. 467, et seq.

turbances receive special attention, with the hope of palliation but not the expectation of cure.

One chemical element, bromine, furnishes salts nearly unanimously adjudged most effective of all drugs in opposing the epileptic habit. Opinions vary as to the choice of a bromide salt. At the Massachusetts General Hospital the sodium salt is prescribed most frequently, with an initial dose of 20 grains three times daily for adults. It is sometimes combined with the potassium salt and the ammonium salt, and not infrequently the potassium bromide is used alone. The choice of a drug for treating epilepsy is a simple matter, but it requires a fine judgment to regulate the dosage and method of administering to attain the best results. Shall the twenty-four-hour amount of bromide be given in one dose or divided doses? In nocturnal epilepsy the drug is administered usually in one dose at bedtime. Shall the amount be varied on alternate days, or every third day, and so on? Shall the bromide be omitted for a time or the amount be increased or diminished? Variations along these lines are followed at the hospital. The skin eruptions are combated with potassium arsenitis, but bromide is not omitted because acne exists, even of severe degree. Two cases at the hospital received Flechsig's treatment under Dr. Putnam's direction. In one the attacks ceased for a year and were less frequent when they recurred. The other case was in no wise benefited. Flechsig's treatment has gained no permanent place and what value it has seems to be due to the bromide used.

Nothing is attempted with hospital patients in the way of inhibiting an impending attack. Unless an aura lasting some little time exists such efforts would be useless. A mother, in one hospital case, gives her epileptic child a shaking and thus inhibits the fit. A man reported that tapping his head was effective.

A recent addition to the bromide group is bromalin, a combination of bromide of ethyl and formin. Féré, finding other measures failed to relieve bromidism, and having recognized that constipation and flatulence were often present, surmised that bromidism might be the consequence of auto-intoxication. Large doses of beta-naphtol and bismuth salicylate were followed by striking results; the tremblings, rash and digestive disturbances disappeared; the appetite improved and there was a general sense of well being. Bromalin, invented by Bardet, meets the need of an antiseptic bromide preparation; and its use in a small number of cases by Rohrmann [6] has been followed by results similar to those obtained by Féré with beta-naphtol and bismuth salicylate. Merck advises giving bromalin in 30-grain doses in wafer paper from one to four times daily. Bromide of strontium is strongly advocated by observers who claim it to be non-toxic. A. Roche,[7] of Dublin, states that the strontium salt produces no constitutional symptoms and never, so far as he knows, caused a rash. The doses used were 60 to 180 grains daily.

A number of surgical experiments have been tried; ligation of the carotids or vertebrals, cutting of eye muscles, trephining and sympathectomy — each has had a certain vogue. Unless some strong, special indication exist, these measures have accomplished little or nothing towards cure or even help. One operator, Chipault, continues hopeful of benefits from sympathectomy; but others can discover no favorable results from removal of cervical sympathetic ganglia.

In the last five or six years institutional treatment of epilepsy has been inaugurated in several States; and the results of even a rather brief trial of this method of caring for epileptics are most encouraging. The cardinal measures carried out at the hospital, or colony, for epileptics, have to do with the diet, hygiene, out-of-door life, and, most important of all, systematized occupation. Very little bromide is used. Some of these institutions are filled to the limit of accommodation and have a waiting list of several hundred eager to be admitted. This method of dealing with epileptics has accomplished most gratifying results; and the special hospitals promise to add largely to the scientific knowledge of epilepsy. At present they offer the most acceptable means for the care of a large proportion of epileptics.

[6] Rohrmann: Monatsschrift für Psychiatrie u. Neurologie, December, 1898.

[7] A. Roche: Lancet, October 15, 1898.

Clinical Department.

NOTES FROM THE NEUROLOGICAL DEPARTMENT OF THE MASSACHUSETTS GENERAL HOSPITAL.

I. Case of Combined Superior and Inferior Poliencephalitis.

by G. L. Walton, M.D., Boston.

The patient, a man fifty-three years of age, was seen in consultation with Dr. Aldrich, of Somerville, and consented to come to the hospital for further study and observation on account of the interest of his case. His occupation for the last fifteen years has been that of a die sinker, using tools similar to those of an engraver. There has been no wasting or weakness of the hands, and no other symptoms which could be attributed to his work excepting, perhaps, a slight paresthesia of the right hand.

The first cerebral symptom noted was indistinctness of speech, coming on suddenly the latter part of August, 1899, previous to which time he had been in good health. He found no difficulty in choosing words, but there was indistinctness of articulation. He had chewed gum at his work practically all the time for several months, and had thought this might have something to do with his trouble. One month later (the last of September) weakness in the movements of the lips appeared; at about the same time he found it hard to masticate on account of muscular weakness; food would catch in his cheek, and he began to drool, particularly while eating. At this time he could not whistle, and all the movements of the tongue were greatly impaired; the face is said to have been drawn to one side. Some time in October he noticed a drooping of the right eyelid, a symptom which had appeared a year previously, but was transient and unaccompanied by diplopia. With the present attack diplopia appeared and has persisted. In November he complained of pain in the back of the neck, appearing only when he was out and about (ocular?). There has been some trouble in swallowing, affecting apparently the constrictor rather than the laryngeal muscles, as the difficulty was in pushing along solid food, but there was no choking. He was unable to eat solid food at all during December on account of inability to masticate. There has been no

headache, no vomiting or vertigo, no edema or shortness of breath. The urine is normal. There is no specific history.

Physical examination made December 20th showed no disease of the radial or temporal arteries, no disturbance of motion, or (objective) sensation. The knee-jerks were normal, perhaps rather active, the plantar reflex, normal flexion of toes in both feet. The general condition was good, the nutrition unimpaired. The fundus was normal; the pupils alike, regular in shape, and reacting both to light and accommodation. The movements of the jaw were extremely feeble in all directions, the lips relaxed, the speech indistinct. The disturbance of the fifth nerve was entirely limited to motion, the lightest touch being felt in the distribution of all three branches. There was external strabismus in the right eye. There was drooping of both lids, more marked on the right. The expression was that of the so-called "Hutchinson face" described in the text-books under ophthalmoplegia. The vision was normal. The diagnosis of poliencephalitis, superior and inferior, was made at this time, and an extremely guarded prognosis was given. The case was classified as subacute and it was uncertain whether improvement would appear, as is common in cases of acute poliencephalitis, or whether steady progression would ensue. The treatment by strychnia, which had been commenced by Dr. Aldrich, was continued, in doses of one-thirtieth of a grain.

When seen at the hospital January 6, 1900, Dr. Aldrich reported that he had been better and worse during the two weeks, but had on the whole steadily improved. It was found that he could now whistle, though with some difficulty, and that the finger inserted in the corner of the mouth was grasped with considerable force by the orbicularis oris. The patient could shut the teeth, and move the tongue in all directions and protrude it, movements which were formerly impaired. (There was no wasting or fibrillary twitching of the tongue.) The strabismus was less marked, the eye following the fingers fairly in every direction, though double vision was still present when looking straight ahead or to the left. The ptosis was practically unchanged. The articulation was somewhat blurring, but he could pronounce the labials, and the linguopalatals, anterior and posterior, perfectly. The movements of the jaw, though stronger, were still very weak; lateral motion and motion forward and back (pterygoids) were feeble, and the attempt to close the jaw could be effectually opposed by holding the chin down with one finger.

The nuclear origin of the lesion in this case is established partly by the bilateral character of the symptoms and partly by the limitation of symptoms to the motor sphere, for it would be incredible that disease involving cranial nerves at the base should spare the sensory fibres of the fifth nerve while affecting all its motor branches. It would, again, be difficult to imagine a lesion of the third nerve elsewhere than in its nucleus, selecting the fibres to the lid and internal rectus, whereas the nuclear groups furnishing these fibres lie in contiguity posterior to the groups for the sphincter iridi and ciliary muscles, and anterior to those supplying the superior and inferior recti, all of which muscles were spared. Furthermore, the involvement of the orbicularis oris at a period when the muscles supplied by the seventh nerve were spared points to involvement of the twelfth nucleus, which probably supplies the orbicularis oris, though the fibres proceed by the way of the seventh nerve.

Cases showing combinations of superior and inferior poliencephalitis are on record but are rare; Dr. Taylor showed one such case from this clinic at a recent meeting of the Clinical Club, the report of which will appear in the JOURNAL. A few cases have been described as "ascending inferior poliencephalitis," in which the lesion gradually spreads from the inferior to the superior nuclei. In this case the first nucleus affected was apparently the fifth; the ninth, twelfth, and probably to a slight extent the seventh, were invaded at about the same time. The affected nuclear groups of the third succumbed within about a month. The case might perhaps then fairly be classed under the ascending form.

The etiology and prognosis of the case are still indeterminate. The patient's own suggestion that excessive chewing was the exciting cause cannot be quite disregarded, especially in view of the initial involvement of the fifth nucleus; it would seem, however, that in this event the onset should have been more insidious. The sudden appearance of the separate symptoms was suggestive of infection, now recognized as the cause in the acute forms of both poliomyelitis and poliencephalitis. Here, however, we are met by the comparatively gradual extension from nucleus to nucleus — in other words, this case came on rather rapidly for the chronic progressive form either of ophthalmoplegia or of bulbar paralysis, and rather slowly for the acute infectious process.

The further progress of the case will be communicated in another number.

Reports of Societies.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

A. K. STONE, M.D., SECRETARY.

REGULAR meeting, Monday, November 20, 1899, DR. R. H. FITZ in the chair.

DR. BEACH reported orally a case of

INTESTINAL OBSTRUCTION

that entered the hospital Saturday afternoon. It exemplifies the importance of the early recognition of obstruction and the necessity for prompt intervention. The patient, a woman, was seized a week before with severe general abdominal pain that never became localized. Shortly after, vomiting began and continued during the whole week until she entered the hospital. It had become fecal after three days. There was moderate distention, but the transverse coils of intestine could be easily recognized through the abdominal walls, which were rather thin. Her general condition was very poor, and operation only offered a possible relief from vomiting, the severest pain having ceased on Wednesday. On opening the peritoneal cavity chocolate-colored coils of intestine corresponding with the external appearances could be seen, distended with fluid and gas. On attempting to turn them out through the incision I found them so unwieldy from their fluid and gaseous contents, that a rupture might easily occur, so I drew a coil over to the side of the operating table, made an incision into

the ileum and discharged from it three quarts of feces. The vicinity of the wound was carefully cleansed with peroxide of hydrogen and the incision closed with a double layer of Lembert stitches. Then that intestine was returned to the abdomen, and by putting the patient into the Trendelenburg position the small intestine gravitated toward the diaphragm. There was to be seen then a tumor, entirely filling the pelvis, which proved to be a cyst of the broad ligament. It was tapped, discharged and the unadherent cyst wall removed. Then, supposing that I had found the whole cause of the obstruction, I tried to push along some of the fluid in the small intestine toward the cecum. I found it impossible, owing to a firm adhesion of a tangled mass of intestinal loops to the left side of the abdominal wall near the ilium. Those were carefully dissected out, the adhesions found to be strong and suggesting that the original lesion may have been an old inflamed tube of the right side with adhesive peritonitis that had extended to the left side, involving the intestine and fastening it firmly to the bone. After the small intestine had been released the fluid contents remaining in the intestine could be easily pushed along to the cecum. The large intestine from the cecum to the rectum contained scybalous masses.

The patient passed through the operation, which lasted one and a half hours, surprisingly well, and was relieved of her vomiting. The expected fatal result occurred on the following morning.

Dr. R. C. Cabot read a paper entitled

SOME POINTS SUGGESTED BY THE CLINICAL STUDY OF 186 CASES OF VALVULAR HEART DISEASE.[1]

Dr. F. C. Shattuck: With regard to the seat of maximum intensity of the murmur of aortic regurgitation, I am a little surprised that Dr. Cabot finds the statements in the books as he does. I know that in many of the books it speaks as if the maximum intensity were usually at or about the aortic area, but I thought — I am speaking from memory — that a good many of the books said very frequently the seat of maximum intensity was about the fourth left costal cartilage. My experience coincides with that of Dr. Cabot that the seat of maximum intensity is to the left of the sternum and about the fourth costal cartilage in the decided majority of cases. I am reminded by this point which Dr. Cabot makes of the time when the late Dr. Calvin Ellis invited me to teach auscultation in the medical school. I told him I should be only too delighted to do so, and he said, "Are you going to teach that the seat of maximum intensity of the murmur of aortic regurgitation is the fourth left costal cartilage?" I said, "Doctor, I have generally found it to be such." Subsequent observation is confirmatory of my earlier experience.

Dr. Cabot speaks very fairly of aortic stenosis, as it seems to me. The signs of pure aortic stenosis are clearly laid down in the books, as theoretically they ought to be. Practically, however, I believe pure stenosis at the aortic valve, without regurgitation, to be a very rare thing. Personally I am not inclined to think that the presence of a palpable systolic thrill in the aortic area is characteristic of stenosis as against mere roughening.

I am rather surprised at Dr. Cabot's statement that he found — I think it was four or five — well-marked cases of aortic regurgitation, sufficiently marked to produce the Corrigan pulse and the pistol-shot sound in the peripheral arteries, without being able to make out any enlargement of the left ventricle. That certainly has not been my experience. Of course the intensity of a murmur, as we well know, is no index whatever of the gravity of the lesion. The biggest murmurs sometimes go with the smallest lesions, and the disappearance of a murmur may be a thing of very serious import, as showing that the heart is not contracting strongly enough to produce the vibration necessary to result in murmur. Of course a very small aortic regurgitation might make a loud murmur, but I should not think it would be likely to produce a well-marked Corrigan pulse and a pistol-shot sound in the crural, for instance. If I got that group of symptoms I should certainly expect to find well-marked signs of enlargement of the left ventricle.

Dr. Morse: I have very little to add, as I agree entirely with everything Dr. Cabot has said. As to the location of the murmur of aortic insufficiency, I have found it most commonly at the left of the sternum and sometimes under the xiphoid. I think it ought to be borne in mind that sometimes the murmur is heard in that location when not in the aortic area at all.

As to the diagnosis of aortic stenosis, I have always felt great hesitancy in making that diagnosis. It seems to me one of the strongest points in favor of it is the character of the pulse, that is, the infrequent pulse with the slow rise. When from the sounds there is apparently a combination of aortic stenosis and insufficiency, the character of the pulse is very important in diagnosis. If the pulse shows the character of aortic insufficiency there can be no great amount of stenosis, no matter how loud the systolic murmur or how transmitted. If, on the contrary, the pulse is not characteristic of aortic insufficiency, the mitral valve being intact, there is almost certainly stenosis also. I have also felt great hesitancy in making the diagnosis of mitral stenosis in the presence of a presystolic murmur. I think we may sometimes be led astray by considering a murmur presystolic which really is at the beginning of systole, and that thus we may be wrong in placing the time of the murmur.

Dr. Folsom: In regard to epigastric pulsation, I think I have seen cases enough to justify me in saying it does not *necessarily* mean anything. I have a case in mind which I saw twenty-nine years ago. The pulsation was so prominent that one gentleman felt sure it indicated an aneurism. Another, a professor of clinical medicine, was quite sure there was something, he could not explain exactly what, and he thought there had been a pericarditis, with adhesions to the diaphragm, and gave a prognosis of consequent progressive enlargement of the heart. The pulsation continued quite prominent for eight or ten years and it finally pretty much disappeared. There is a slight mitral insufficiency and no material enlargement of the heart at the present time. I have seen several cases where I am quite satisfied that very strong epigastric pulsation, giving rise to great anxiety perhaps, does not *necessarily* mean anything.

With regard to mitral stenosis, my great difficulty has been to find any murmur at all, and I think that has given me more difficulty than other condition with regard to that particular valve. I had supposed that the seat of the maximum intensity of the aortic re-

[1] See page 106 of the Journal.

gurgitant lesion was where Dr. Cabot stated it to be, and I had been so long in the habit of considering it so that I had quite forgotten the teaching at the time I was in the medical school, and quite forgotten the fact it was at all generally considered otherwise. I think it has been — I would not say universally so in the cases I have seen, but certainly in a very large majority.

DR. SHATTUCK: Is it possible that this epigastric pulsation may be explained in some cases by a curvature of the spine in that region, a lordosis throwing the heart and great vessels a little farther forward than usual? That would seem to account for some cases of suspected abdominal aneurism.

DR. HEWES: I should like to ask Dr. Cabot if he thinks there is any circumscribed area for the normal apex beat. I ask this in connection with his statement that he found several cases of aortic regurgitation where he perceived no enlargement of the heart, as I understood. I think he said where there was no evidence of enlargement of the left ventricle. In my clinic this year and in former years, I have taken all the normal cases — cases in which the heart was normal — I could find, and tried to locate the apex, and I have found great variation in what we would call the normal position, sometimes as much as three-fourths of an inch in different people, so that it would be quite possible, it seems to me, to have some enlargement of the heart which would make it a large heart for the person in question and yet not be outside of the stated limits for all people. The existence of this variation may account for the apparent lack of hypertrophy in the four cases of aortic regurgitation mentioned. It is difficult to understand how this lesion of the aortic valve can exist for any time without causing enlargement.

DR. SHATTUCK: In a pure mitral stenosis we should have no enlargement of the left ventricle. I have seen this summer a number of cases where I had every reason to suppose I had pure mitral stenosis and yet had enlargement. My general position is that there is no statement any one can make about the connection between any form of cardiac disease and any kind of hypertrophy, and I think I have cases which will justify that. No one can say any form of cardiac disease is always accompanied by hypertrophy of one or the other ventricle, or that in such hypertrophy is always absent in it. I think we have to take a perfectly general and "expectant" position in regard to these points.

DR. CABOT: I am very much in a questioning attitude. Dr. Folsom says that the epigastric pulsation may not mean anything. I should like to ask what it does mean if it does not mean cardiac disease.

Then I want to have another question answered, as to what we are to do in these cases of presystolic murmur clearly recognized at the apex in the presence of an aortic regurgitation; are we to suppose the smallest number of causes possible and say there is no mitral lesion, or say that we do not know, or what is the proper and scientific thing to do? What are we to say to our patients? What are we to write in our diagnosis books?

In regard to Dr. Hewes's question as to where is the normal apex, I have gone on the general supposition that an apex in the normal position was one in which the percussion dulness (agreeing with the outermost points at which you could feel any rise and fall of the chest) was within the nipple and not lower than the fifth space.

DR. FITZ: When I was accustomed to control clinical observations by autopsies I observed that not infrequently lesions of the heart were found that were not expected and were not found when expected. As regards the question Dr. Cabot has raised with reference to the diagnosis of mitral stenosis, I would say that I lay much more stress upon pulmonic accentuation and hypertrophy of the right ventricle than upon the characteristics of the murmur at the apex.

DR. WALTER E. PAUL read a paper on

EPILEPSY.[2]

DR. WALTON: Dr. Paul has opened a subject too large to discuss exhaustively, even in the three directions from which he has approached it. It is always of interest and value to hear from one who has treated a large number of cases of a disease so well recognized as this one, to know, for example, how far the clinical types and treatment really agree with the text-books. In regard to the etiology, which Dr. Paul has touched upon, although this branch was not included in his subject, there are several points of interest. I thoroughly agree with Dr. Paul's position that although toxins may act as the exciting cause of an attack, the real underlying condition is a defective neural endowment; that is, these patients are degenerates, unable to stand the stresses to which we are all subject. Under etiology I should like to speak of two symptoms which have been mentioned in connection with epilepsy, namely, infantile convulsions and migraine. It is, I think, not infrequently taught that infantile convulsions, even though disappearing, tend to produce or to forerun epilepsy later in life. Again, migraine has been spoken of even in text-books as a sort of equivalent for epilepsy, and the fear has been held out in some instances that migraine may precede a tendency to epilepsy or that one may replace the other. I saw, not long ago, such a reference by a Russian writer. These two suggestions, it seems to me, lead to an unnecessary fear. Dr. Carter and I have studied the subject of infantile convulsions, examining a great many epileptics with regard to this point. We found no greater percentage of epileptics who had had convulsions in infancy, disappearing to return again as epilepsy, than we found in ordinary individuals. We did find, however, quite a number of cases in which the convulsions became continuous and led to epilepsy later in life. We drew the conclusion that given the case of an infant suffering from convulsions, we cannot assure the parents that that child will not become an epileptic, but we can say the chances are against it, because out of many such cases only a few become epileptics. We can, it seems to me, fairly assure them that if a child has ceased to have convulsions and grown to the age of twelve or thirteen, he is no more in danger of epilepsy than another child.

In regard to migraine, exactly why this symptom has been deemed analogous to epilepsy it is rather hard for me to see. In the first place, the absence of consciousness, which is the distinctive feature of epilepsy, is entirely wanting in migraine. In the second place, the sudden onset, the fall, the personal injury, is not even suggested in migraine; there is entire ab-

[2] See page 107 of the Journal.

sence of convulsion or anything of the sort; in fact, the whole picture is one from the sensory side, whereas epilepsy is evidenced largely on the motor side. It has occurred to me recently to start an investigation of epileptics with regard to the number of cases of migraine. I have only had a chance, so far, to question 35 patients, but this number already has brought out one or two interesting features. In the first place, it *has* shown a rather large proportion of migraine. Out of 35 patients, 13 gave a perfectly distinct history of migraine preceded by a blur and nausea, vomiting, malaise and headache lasting from a few hours to a day or over night. This does tend to favor the proposition that these two diseases have a common parentage, that they both occur perhaps among degenerates, still it is a long step from accepting this proposition to deciding that one stigma of degeneration will lead to the other, because, as we well know, almost every one has one or more signs of degeneracy; we are, however, far from deciding on this account that one is likely to become an epileptic. I should say with regard to these 13 cases, that although they may show a common parentage, yet they are far from indicating that migraine led to epilepsy, because in only four had the epilepsy occurred before the migraine, and of the four in which this was the order, all were typical cases of migraine, beginning at the usual time, namely, ten, twelve to fourteen years of age, and of those four cases one had been completely restored by use of proper glasses. All of them, by the way, had errors of refraction which the oculist to whom they were sent decided were quite sufficient to produce migraine, with the exception of one case of myopia, not, I believe, a common cause of migraine.

Coming to the question of complete loss of consciousness in diagnosis, I agree with Dr. Paul. All the text-books say so also, that complete loss of consciousness is the one characteristic feature of epilepsy without which we are hardly justified in making a diagnosis. I have been in the habit in my clinical exercises of having a half dozen or more patients recognized as epileptics brought in, and making a chart upon the board with the number of the case down the left-hand side, dividing the chart into squares and at the top writing the various symptoms of epilepsy, loss of consciousness, onset of attack (sudden or gradual), question of drooling or frothing, biting the tongue, injuring the face, passing the urine or feces, the cry, the aura, etc., and it invariably occurs that the one list which is uniform is the list under the head of loss of consciousness. They all have complete loss of consciousness, although by no means all drool or froth, and only perhaps half have an aura, or perhaps half void the urine. This is an important point in diagnosticating epilepsy from hysteria, while medico-legally it is of the utmost importance in deciding whether a person who has performed a criminal act is to be adjudged a criminal or epileptic. Another important point is in connection with treatment. It is an undesirable thing to put hysterical patients on continuous bromide treatment. I have generally found in the doubtful cases, however, it is wise to regard them and treat them as epileptics.

Coming to medico-legal cases this question of loss of consciousness is a very important one. I remember a lecture of Wagner's in Leipzig, in which I understood him to say that a certificate should never be given of epilepsy unless the physician had seen the patient in an attack. It certainly is true that we should not accept unquestioned the mere history of absolute unconsciousness, when there is an object to be attained by giving the history of epilepsy, as, for example, in the case of a criminal. A history of loss of consciousness may come from one or two other causes: the first is the good (or rather bad) old-fashioned one of lying, which, somehow of late, in medico-legal investigations, seems to be going somewhat out of vogue, but, unfortunately, it has not gone entirely out of practice. In short, when we find there is an object to be attained, we should investigate the case with the greatest care and not rely implicity on the patient's statement. The second cause of mistake in diagnosis in these cases is alcoholism. It is not infrequent in murder trials to find the diagnosis of epilepsy brought up in defence in cases in which a considerable amount of alcohol has been taken. Now in these cases it seems to me that unless the history of epilepsy is very strong, and unless the proof is very clear that this was the occasion of an epileptic attack, if the person has taken a considerable amount of alcohol, the benefit of the doubt should be given to the alcohol and not to the epilepsy.

It has been demonstrated that epileptic attacks produce forgetfulness, not only for what has occurred during the epileptic attack, but for what has occurred immediately preceding the attack — so-called retrograde amnesia. Although this may be possible, it is certainly a rarity, whereas it is a common thing for a person under the influence of alcohol to go on, more or less in an automatic way, perhaps with conversations, and to carry on, I will not say his ordinary duties, but his ordinary pleasures, apparently conscious at the the time of what he is doing, but retaining no memory of his acts.

It has been asked whether an attack of vertigo can be regarded as an attack of epilepsy. There are certainly many equivalents of epilepsy and one equivalent is a temporary giddiness in which the person loses consciousness, but recovers so immediately that he does not fall. This may be called a true epileptic vertigo, but when it comes to deeming vertigo without unconsciousness epilepsy, I should be inclined personally to draw the line. When we remember what a number of causes there are for vertigo, such as disease or disorder of the eyes, ears and stomach, if the person feels a tendency to fall in one direction or another, or really does so, retaining his consciousness, I should not regard that as epilepsy.

On the subject of treatment I have nothing to add except to emphasize the importance of institutions in which epileptics are kept as far as possible at work in the open air. The worst thing for an epileptic is to be continually watched, attended like an invalid, and guarded from all danger. I always tell parents that, far from doing this, they should take their chances within certain limits, remembering that with every child chances have to be taken when he goes bathing, sailing, or riding a bicycle, and that even if such sports were allowed, the chances would be only somewhat increased in case the boy were liable to an occasional attack of epilepsy. Certainly as far as the less dangerous sports are concerned, the advantage to be gained by watching a person every moment is nothing compared to the injury done by making him morbid on account of the feeling that he is continually under observation.

DR. E. M. GREENE: I do not know why I should be asked to speak unless it is desired to hear from a general practitioner who is more interested in the treatment of these cases than in the more refined scientific points. It seems to me that this idea of the epileptic as a degenerate is being more emphasized than it used to be, and that this degeneration shows itself not only in defective physique, but also by an impaired mental condition, or one which is very likely to become impaired in the future. In this connection a history of alcoholism in the parents is said to be much more frequent than the direct heredity of epilepsy. The hopeful thing at present, it seems to me, is the idea of establishing colonies for epileptics and giving them outdoor life, regular exercise, preventing any occasion for excitement, such as might occur in the evening in a city, and which is absent in the institution treatment, and also carefully regulating the diet. Epileptics are usually great eaters and very injudicious, and it is extremely hard to get them to carry out the proper diet that is prescribed for them. Now, looking at the epileptic as a degenerate, there are two ideas which occur to me which have a bearing on the treatment, especially the drug treatment. We see stated in the text-books the importance of using bromide in large doses, continuously, and for years after the attacks have stopped, in order to prevent their returning, and, on the other hand, we see almost nothing in regard to this newer idea of hygienic regulation of the epileptic's life. In these institutions I am told that very little bromide is given and in some cases not a dose. Personally I have seen some bad results from the use of bromide and, although it is in many cases very useful, yet we should not use it in a routine manner. For instance, to give three illustrations of harmful effects, I have seen in the case of a middle-aged man, who was the proprietor of a liquor store and led a very exciting sort of life, and had some chronic interstitial nephritis, that the effect of bromide was extremely depressing. While taking doses of only ten to fifteen grains three times a day, after a number of months he became strongly suicidal and was in a condition of mild melancholia. I let him go without the bromide, and could not see that he was any the worse for omitting it. Taking a vacation and going to Florida for several months, as he did in three successive years, he was very much relieved. When he came back to work he hated the bromide so much that he took quack medicine instead, and it is my experience that a great many of the more confirmed epileptics do resort to quackery, thus giving conclusive proof that the treatment which they have previously had from regular doctors has been unsatisfactory to them. This quack medicine, which did not taste at all as if it contained bromide, apparently accomplished more than the bromide had, although of course we must remember that the disease has its curious turns apart from treatment. In another case of an aged lady, whom Dr. Folsom saw this summer with me, where there was cerebral arteriosclerosis and typical epileptic attacks, bromide was exceedingly depressing. It was given in ten-grain doses only three times to control mental excitement and restlessness. On the first two occasions the patient went into a comatose condition which lasted some eight hours or more and which I attributed at the time to the progress of the disease and looked for a bad result. The patient recovered and went on in a very satisfactory condition for a while. A third trial of bromide caused exactly the same state of affairs and I then concluded that it was more dangerous to give ten grains of bromide to this patient than one-fourth to one-half grain of morphine to an ordinary individual. Then in a third case I have seen bromide pushed to such an extent as to produce delusions and hallucinations of sight and of hearing in a person who had never shown any symptoms of insanity. The patient was sent to the McLean Hospital while I was resident there and treated without any medicine, simply as an insane person, and in about a week the symptoms began to disappear; the patient became entirely rational. It seemed to me in the anxiety to control the attacks in this case the doctor might have pushed the treatment in a routine way altogether too far. I have a feeling that, if, after a thorough trial for several months, the general condition of the patient is not satisfactory nor the number of attacks diminished, I should be very much inclined to give extremely small doses or omit it altogether, and preferably to substitute the outdoor life of a colony.

Another point which seems to me important, and which is emphasized in the text-books without very much evidence in support of it, is in regard to the question of omitting meat from the diet. If these people are degenerates, in a poor physical state, we do not want to depress their vitality by large doses of bromide, while at the same time interfering with their nutrition by depriving them of the valuable proteid elements. Some of the text-books advise entire abstinence from meat; almost all of them cut it down to a small amount once a day. I notice in the text-book of Wood and Fitz that the allowance of a moderate amount of meat twice a day is considered beneficial and the contrary treatment, entire abstinence, is regarded as of no value. In regard to this particular point, I have in mind a patient who was a poor man and went to the Massachusetts Hospital, where he was told to abstain entirely from meat and given a good deal of bromide, which was practically carrying out the treatment I had already given him. The attacks did not diminish at all and the man, getting discouraged, did as he pleased. I do not think he had carried out directions in regard to diet strictly, but when he gave up the attempt and indulged in meat as much as he liked and neglected to take bromide, he went two years without having any attacks at all. I should like to have some good evidence in regard to this diet question. In private practice this is very hard to get, but in these institutions the question ought very soon to be settled exactly what sort of diet is satisfactory, because there the diet can be absolutely controlled.

DR. FOLSOM: The diagnosis of epilepsy, of course, in the enormous majority of cases is very simple and the number of cases where there is any difficulty in diagnosis comparatively small, so that does not interest the physician in general practice very much. I do not know that I understand the reader and Dr. Walton, but if I do, it seems to me there are a good many attacks of epilepsy which they are inclined to deny, that is, cases of people who perform acts which seem to be entirely intelligent to persons observing them, and yet where there is complete amnesia. With regard to the etiology, the cases that I see now are usually people in fairly good circumstances in life, and very few of them are degenerates; a very decided minority are degenerates, and in looking over my

cases some time ago, I was surprised to find the large number of people in absolutely perfect physical condition, so far as one can see, and where the condition seemed to be due to a severe injury to the head or to successive injuries to the head. In regard to prognosis, it seems to me there are very few cases where one cannot do a good deal in epilepsy provided there are no signs of degeneration and no indications of decided mental trouble. I think after an epileptic begins to be distinctly demented, it is rather unusual for medical treatment to be of much avail, but I think before that if they show signs of dementia or organic trouble, in the vast number of cases the number of attacks can be enormously reduced in frequency and in severity. I do not think that that means always the giving of medicine. I think quite a number of cases do better without medicine of any kind than they do with any of the drugs which have yet been recommended for epilepsy, but the one which everybody finds of the greatest use, of course, is bromide in its various forms. Personally, I rarely give bromide of potassium or sodium, because they are more depressing to the heart than the ammonium or strontium and the bromide of sodium is more disagreeable in taste, but I think in the vast majority of cases a great deal can be got by giving them. There are various ways. One way is to begin with enormous doses and get the patient thoroughly bromidized. In my experience that does not do well at all. If you have your patient under your care for a few months you are more apt to get a striking diminution in the attacks, a more brilliant temporary result, but the ultimate result is usually bad. The vast majority of cases have to be treated many years. The way I have found most successful is to watch them closely and give the maximum amount of bromide which they can take without injurious effect. Of course some people get bromidized after small doses, some cannot take bromides at all in any form or quantity any more than iodides, and I rarely give either of these drugs in any considerable dose without their being under my observation almost daily for a sufficient length of time to be sure there is no idiosyncrasy and that you get no toxic action of the drug. Of course the cessation of attacks for a long time does not necessarily mean cure. I do not think I have ever seen in my life a case of epilepsy in which I felt satisfied of absolute cure. I have seen them go five, ten, or even twenty years without attacks, and have seen quite a number of cases I thought were cured, but in ten to fifteen years the attacks would come back, and one could hardly call it a new disease. I remember one gentleman who had attacks up to the time he was twenty years old, and they ceased forty-five years, until he was sixty-five. That is, of course, rather unusual. I do think you can get very satisfactory results in the treatment in the vast majority of cases. I think diet makes a great deal of difference. I don't think it makes much difference in the cases you would get in a colony provided you give a reasonably sensible diet, but patients whose nervous systems react rather readily I think are helped a good deal by a very careful diet. With regard to the manner of life, if people are reasonably intelligent, I let them regulate their lives themselves. I think it is the best way to do. They know what is likely to occur and they can regulate their lives accordingly. I remember a gentleman who was under my care some years whose life I did not think it was worth while to regulate much in that way, and who saw two of the leading consultants in London at my request, and they advised him never to go anywhere unattended, never to be alone under any conditions whatever. He came back to this country and said that a few weeks of that satisfied him, that he would be nothing but a vegetating being in a short time, and led his life; went to riding horseback and canoeing, and in one of his attacks his canoe capsized and he was drowned, and I have no doubt he would say he did the best thing. A young lady, now a patient in this community, rides horseback, jumps over a three-foot fence on that same theory, and I am inclined to think on the whole she is sensible. She says that the minute she begins to restrict her life, her life is all gone, her usefulness ended, so that it seems to me that is a matter one has to leave very largely to the patients.

Dr. Knapp: I have been rather interested in the last few years in the discussions which have taken place as to the toxic theory of epilepsy, especially in the French journals, by an opportunity I have had of comparing the application of the theory to two patients who have been under my care for several years. In one case the patient tried his best to follow a careful régime, yet almost every attack that he has had for a period of half a dozen years could be traced directly to some disturbance of his digestion, or indiscretion in his diet. The other man, when the question of regulation of diet was brought up, said: "I will try to do what I can, but you know a man going out and dining must eat and drink what is set before him, and I cannot always follow a restricted diet." He has had fewer attacks than the other patient, and in no instance, with a single exception, in five or six years, have I been able to trace any connection whatever between any digestive disturbance or indiscretion in diet and the occurrence of the fit. Two cases, of course, in themselves, are of little importance, but it has always seemed to me that the toxic theory is by no means sufficient to explain the epilepsy excepting, as Dr. Paul and Dr. Walton have said, as an exciting cause of the individual attack.

In regard to the diagnosis, I agree fully with Dr. Walton in questioning very much the relation between migraine and epilepsy. We have all of us seen patients who have had migraine for very many years, whose children after them have had migraine, and yet there has been no history whatsoever of epilepsy in the family. I have not gone over my statistics of cases of epilepsy carefully, but my own experience is that very few cases of epilepsy have complained of anything like a typical migraine attack.

I am not quite so ready as Dr. Walton is to regard convulsions in infancy as a mild affair. I think if a child has convulsions it is an indication that the child's brain is a more unstable brain than that of the ordinary child. I admit of course that a young child will have convulsions from an exciting cause which the adult brain will not have, and when a child is brought to me with the history of convulsions in infancy I do not prognosticate epilepsy by any means, but I think that such a child is one most certainly to be watched. A considerable number of those cases in my experience have developed epilepsy later. In other cases the convulsions have proved to be the beginning of some structural disease in the brain, such as hemiplegia or some defective development of the brain leading to imbecility. I unfortunately did not hear the beginning of

Dr. Paul's paper, so that I do not know whether he brought up the point of the necessity for careful examination to see whether there is any trace of infantile hemiplegia which may be the cause of the epileptic trouble. I have found traces of infantile hemiplegia in a certain number of cases, although I think not quite so frequently as Dr. Sachs, of New York, has claimed. Convulsions in infancy, however, are somewhat serious, and I think that such a child should be carefully watched lest in later life trouble develop.

On the question of loss of consciousness I should agree in the main with what has been said. I think that loss of consciousness is the essential factor in making the diagnosis, yet I recall certain cases of undoubted epilepsy where occasionally in the attacks of petit mal the consciousness was not wholly lost. The patients have said that they retained a certain consciousness of what was going on about them; they sometimes have been able to give a correct account of things which were said or more rarely of things which were done during the clouding of consciousness of the petit mal. Furthermore, I have had occasion to question more than once whether the loss of consciousness could be regarded as a definitely distinctive symptom in the diagnosis between epilepsy and hysteria. I have had under my care this summer one of the most trying cases of convulsive attacks that I have ever had anything to do with in which the patient was certainly hysterical to the most extreme degree, presenting the typical stigmata of hysteria. He had attacks which were undoubtedly hysterical attacks, yet he had others in which there was a simple loss of consciousness without convulsion, and it was very difficult to determine whether those could be regarded as epileptic or as hysterical. And in the attacks which seemed more definitely hysterical he went through various automatic purposive movements, yet there was a complete loss of memory for what took place. One feature which had certain weight with me in deciding that there was a mixture of the two diseases was the fact that not infrequently the convulsive attack whose nature was doubtful came on during sleep; he was attacked in his sleep and thrown out of bed in the violence of the attack.

In the ordinary routine treatment of epilepsy I do not go quite so far as they do at the Massachusetts Hospital in the absolute cutting off of meat. I usually allow meat or fish once a day, but as a rule I advise against taking it at night, taking it either in the morning or at noon. My experience with patients is that the great majority of them are fairly ready to follow such regulations. One writer on epilepsy — I think it is Gowers, but I am not quite sure — has questioned whether meat really were so injurious to the epileptic as a good many of the text-books say, and I confess that I am still somewhat in doubt. I think we cannot lay down any absolute rule. We must treat the individual case, and we must especially study the patient's nutrition carefully; if we find under the limitation of meat that the patient is getting weak and pulled down, it becomes necessary to build him up in whatever way we can. In the routine treatment, furthermore, I depend chiefly upon the bromides. Dr. Greene has just spoken of the bad effects of bromide, and of the fact that the text-books say so little about the necessity of cutting off bromide. Dr. Peterson recently has argued quite strongly in favor of the complete cessation of the bromide in chronic epileptics who had been taking it for a long time. I think that in any event when we are giving bromide we must watch the patient carefully and be guided, not by any general rules as to whether it is desirable to cut off bromide or not, but by the patient's condition. Personally I have seen the bad effects of the large doses of bromide, getting the patient into a condition of bromidism, often enough so that I want to watch the cases very carefully and keep them, as Dr. Folsom has suggested, with about as much bromide as they can comfortably tolerate without getting them into the condition of bromidism.

The Flechsig treatment I have not had the opportunity of carrying out in its detail. I confess that to give the patient the doses of opium which Flechsig has recommended seems to me a somewhat risky thing in the ordinary patient who is wandering about and whom you cannot keep under your control; therefore, in the out-patient clinic I do not like to give it and unless I can absolutely depend upon the patient in private practice to report at the appointed time I hesitate then.

There is one modification of the bromide treatment which Dr. Paul did not speak of which has seemed to me a very valuable one in a considerable number of cases, and that is the combination of the bromides with some cardiac tonic, especially the mixture of adonis vernalis with codeia as recommended by Bechterew. I would agree fully with what Dr. Walton and Dr. Folsom have said about the bad effect upon the epileptic of putting him into too confined a life and forbidding him to do the things which he wants to do and desires to do. In that way I have been somewhat skeptical, I must confess, in regard to the advantages of the colonies for epileptics. Of course there are many cases which must necessarily go to a colony, but at the time the epileptic hospital at Monson was started I went over rather carefully a good many of the cases of epilepsy that had been under my care, and it seemed to me that on the whole, as they had gone on, it was not altogether the best thing to send them to an institution, to put them into a routine life where they were cut off from a good many of the enjoyments of their lives, and where they could not lead the ordinary life of the community which they were leading fairly well and which did not seem to harm them. In the same way we can recognize the possibility of harm to an epileptic from riding the bicycle, sailing, etc., but it is a risk which I think it is, on the whole, better for the ordinary epileptic to take who is having a convulsive attack once in two, four, six weeks or six months, than to feel that he is living an invalided, restrained, cramped life.

DR. PAUL: I would like to correct Dr. Folsom's impression that Dr. Walton and myself do not recognize the psychical equivalent of epilepsy.

Recent Literature.

Nervous and Mental Diseases. By ARCHIBALD CHURCH, M.D., and FREDERICK PETERSON, M.D. Pp. 843, with 305 illustrations. Philadelphia: W. B. Saunders. 1899.

Although bound in one volume this is really two separate treatises, one of which has since appeared in-

dependently. Of these Dr. Church has written the treatise on nervous diseases and Dr. Peterson the treatise on mental diseases. The principle of division is the old one — affections usually requiring restraint are called mental diseases, those rarely requiring restraint nervous diseases. The authors have missed an opportunity to write a treatise on diseases of the nervous system which should deal with those diseases as a whole, emphasize the need of psychiatric examination in all diseases of the brain, and describe paranoia, general paralysis and other cerebral affections which are apt to require restraint in their treatment, in their proper relation to other affections of the brain. By adhering to the old division there is considerable repetition in the introductory chapters of the two sections. The first part of the volume, on nervous diseases, is a fairly good presentation of the subject, although not fully abreast of our present knowledge. No notice is taken, for example, of Flechsig's association centres in the chapter on cerebral localization or of Dejerine's views in the chapter on aphasia. The style, moreover, is often obscure and involved, and the clearness so essential for the beginner is lacking. The work is, however, fairly complete in its presentation of the diseases of the nervous system, the conclusions are usually sound, and the illustrations are many of them original and good. The second part of the work, on mental diseases, is more clearly written, but its classification and description of mental diseases is much more antiquated. Great and unwarranted emphasis is placed on the stigmata of degeneracy, to which one-tenth of the second part is dedicated. Heredity is made prominent, without a word as to modern ideas questioning the possibility of inheritance of acquired characteristics. Strain is put forward as the other important causative factor, in which, as we find later, toxic influences are included, but the influence of toxic causes is not sufficiently emphasized. The classification, always a stumbling-block and always unsatisfactory, is old fashioned. Mania is the first affection described, and we hear nothing of the doubts as to the existence of mania as an independent disease. We read much of the exaggerated flow of ideas, and little as to the possibility that all mania is but a manifestation of periodic insanity. We find no mention of confusional states, and scanty mention — a trifle over a page — of primary dementia, while eighteen pages are given to the autobiography of a paranoiac, something over twice as much as is given to the account of the disease itself. Failing a work which should present the so-called mental diseases in their true relation to other diseases of the brain, it would have been desirable to give a more modern presentation of the subject for the student. Good modern books on insanity in English are rare. The discussion of insanity in the present work, however, is hardly to be commended.

Surgical Anatomy. A Treatise on Human Anatomy in its Application to the Practice of Medicine and Surgery. By John B. Deaver, M.D., Surgeon-in-Chief to the German Hospital, Philadelphia. In three volumes. Illustrated by about 400 plates, nearly all drawn for this work from original dissections. Vol. I. Upper Extremity; Back of Neck; Shoulder; Trunk; Cranium; Scalp; Face. Philadelphia: P. Blakiston's Son & Co. 1899.

The first volume of this notable work is an extremely handsome book of six hundred pages, illustrated by one hundred full-page plates, most of them from original dissections. In this respect the book is a noteworthy exception to the majority of anatomical and surgical text-books, which are too apt to be content with plates borrowed from other and older works. The artistic work is excellent and details of structure are so well brought out that the plates resemble good dissections far more closely than those in the majority of other works of this kind. Superficial surgical anatomy and the lines of incision and dissection for operating on the nerves and arteries are admirably illustrated.

The descriptive text is in the main concise and clearly written. The book is eminently practical, and replete throughout with references to the surgical application of anatomical points, a feature which adds greatly to its value, by giving a practical interest to a large number of anatomical facts which the student is apt to regard as dry and uninteresting.

From the practical surgeon's point of view the surgical part of the work is not sufficiently full to enable it to take the place of works on operative surgery.

The excellence of the plates and text, however, will render it of great value to the surgeon in looking up the anatomy of special regions to be operated upon, so that it will prove a valuable addition to his working library. When the work is completed by the issue of the remaining volumes, the author and publisher will have the credit of having issued one of the handsomest as well as most complete and comprehensive works on the subject in existence.

The Hygiene of the Mouth. By R. Denison Pedley, F.R.C.S. (Edin), L.D.S. (Eng.), Dental Surgeon to the Evelina Hospital for Children, London. London: J. P. Segg & Co. Philadelphia: S. S. White Dental Mfg. Co.

This is one of the most important volumes on the subject of hygiene that we have seen. Its usefulness will be only limited by the extent of its circulation. The author has gathered a startling array of statistics from schools and hospitals, showing how widespread is dental caries in both the temporary and permanent teeth. He points out with great directness the evil results of decayed teeth upon the health of the sufferer, and cites many very interesting cases which show how far reaching in its disastrous consequences an unhygienic condition of the mouth may be.

The author has treated his subject with an earnestness and simplicity that is most convincing. He has refrained from advancing new theories for prevention or new methods for treatment, but he has sounded the alarm in no uncertain voice and pleads that the evil may be honestly faced and so far as possible eradicated. The book not only deserves to be in the hands of every physician and dentist, but should claim the attention of intelligent laymen as well.

Sanitary Progress in Guam. — In a recent report by Captain Leary, Governor of Guam, it is stated, according to the *Medical Record*, that all precautions are being taken to improve the sanitary condition of the station but a suitable water-supply system is necessary in order that the ground cisterns and wells may be closed and sealed, as they are now contaminated. The evaporating plant at the station is nearing completion, and the sewage system from the government houses to the ocean will be finished in a short time.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, FEBRUARY 1, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.

REPORT OF THE SURGEON-GENERAL OF THE ARMY.

As was to be expected from the expansion of our possessions, this last report of the Surgeon-General contains much matter which has not hitherto appeared. The exigencies of the war, of necessity, brought about many changes in the personnel of the Medical Department of the Army, much of which is already familiar to our readers. These matters relating to the hospital corps and nursing are discussed in detail, and the old story of Chickamauga and other camps again officially narrated. The facts of overcrowding and bad management generally are stated in an unvarnished fashion, and the reader is left in great measure to draw his own conclusions.

A statistical résumé of medical matters in Cuba, Puerto Rico and the Philippines is of interest, as showing how large a responsibility is being thrust upon the army medical service, and, we may also say, how well it is being met. This portion of the report is embellished by a number of half-tone photographs of hospitals in those countries. The hospital ship also comes in for its share of attention and illustration.

The *Bay State* receives rather scant notice and does not appear to have impressed the Surgeon-General with her usefulness. No mention is made of her service in transporting the sick during the war to northern ports, and in general the statements regarding her are less flattering than one could have wished. We quote the report's words in full:

"The hospital ship *Aid* was purchased from the Massachusetts Volunteer Aid Association in November, 1898. This vessel, formerly a fruit steamer, had been fitted up at considerable expense by the people of Massachusetts, and under the name of the *Bay State* was reported to have done good work during the previous summer. It was found, however, after a short experience during the occasionally severe weather of the winter months, that her motion in a seaway was such as to render her unsuitable for the transportation of sick. While in New York Harbor getting ready for sea her ice machine exploded, killing one man, injuring 11 others, and causing much damage to her machinery. Her first voyage was with medical supplies to Santiago, Cuba, which she reached December 24, 1898. Thence she proceeded to Kingston, Jamaica, and Havana, Cuba, returning to Savannah, Ga., for more supplies January 24, 1899. She was then ordered to Cienfuegos, Cuba, the intention being to use her as a supply ship and floating hospital for posts on the southern coast of the island, but early in March, having suffered considerable damage from storms, her commanding officer, Capt. A. N. Stark, assistant surgeon, United States Army, was directed to take her to Newport News, Va., for repairs. Here she was turned over to the Quartermaster's Department, and her hospital property and personnel were carried by the *Missouri* to Havana, Cuba, to be used in outfitting the transport *Terry* as an extemporized hospital ship."

The statistics concerning the various diseases occurring in the army call for no detailed mention. The effects of typhoid fever were something appalling during 1898; 4,130 cases occurred in the regular army in that year, divided as follows: In the first quarter, 16 cases; in the second, 131; in the third, 3,089; in the fourth, 894. The usual bane of armies, venereal disease, shows 3,727 cases, fewer by several hundred than the cases of typhoid fever. Altogether, in spite of the good work now being done, the report is not altogether pleasant reading, in view of all that was left undone during the period it covers.

MILITARY SURGERY IN SOUTH AFRICA.

THE stubborn resistance with which the Boers are meeting the British in South Africa has opened the eyes of the world to the thoroughness and adequacy of their preparations for the war, and led to no little criticism of the British Government and the War Office for alleged lack of preparation, and underestimation of the character and amount of resistance which was to be expected. Transportation and distribution of men and supplies seem to have been most effectively provided for. Whatever shortcomings, such as lack of cavalry and artillery, inadequate scouting or whatnot, have been brought to light with regard to the various branches of the service, one branch, the Royal Army Medical Corps, may be said not only to have shown no inefficiency, but on the other hand to have proved more than equal to the arduous tasks imposed upon it, both in preparation and execution. Sir William MacCormac, writing to the *Lancet*, after an inspection of the army hospitals at the Cape and in Natal, and having been present himself at the battle of Colenso, both at the field and base hospitals, as consultant and operator, writes to the *Lancet* that "in all the details of the necessary movements of the sick and

wounded, no army has ever been so well provided as ours is now in the field." He speaks in the highest terms of the medical arrangements as leaving nothing to be desired and expresses surprise at the wonderful recoveries and the very small death-rate. Universal testimony is given by those who have been at the front, that the surgical results are exceptionally good. This is no doubt partly attributable to the favorable nature of the Mauser bullet wounds, and to the healthful climate of South Africa, but the use of antiseptic dressings, the care taken to secure surgical cleanliness, the coolness and skill of the surgeons in the field, and the excellent arrangements for prompt aid and transportation of the wounded must be given no small share of the credit.

At the battle of Colenso a hospital train was actually run into the scene of action, and was ordered back by the chief medical officer when two shells burst close to it. The wounded were taken to the train directly from the field and all the wounds had been dressed, and dressed extremely well, under fire. "Very few of the dressings needed readjustment, and rifle-splints and tourniquets had been adjusted carefully and deliberately, under circumstances of great difficulty and danger."

At the field hospitals at Chieveley, which were situated on a hill about 400 yards outside the fire zone during the battle, there were three operating tents, where some 800 patients were treated during the day (December 15th). "The way in which the wounded had been dressed upon the field, and each man ticketed with the nature of his wound, his name and regiment, was excellent, and extremely useful for purposes of identification." The more trivial cases were sent to the tents, the severer cases redressed and operated upon by the four surgeons of the field hospitals and the three surgeons of the bearer companies.

Ambulance after ambulance, and stretcher squads in continual succession, poured in their quota to the long line of wounded, who lay in rows outside the hospital tents awaiting their turn. The work performed in the operating tents was of great efficiency, the operations being deliberately carried out with skill and despatch under the very trying circumstances of intense heat, hurry and excitement all round. The surgeons on duty began work at 3 A. M., and when Sir William visited them in the evening, they were still at it and continued for hours afterward without food or rest. As soon as the men were treated at the field hospitals, the hospital trains took them rapidly away to the base. Five trains carrying on the average 100 wounded each left between 2 P. M. on the 15th and 8 A. M. on the 17th. This wonderfully rapid and efficient work at the field hospitals was only made possible by the still more remarkable and heroic services of the medical force on the field and the 2,700 ambulance bearers under Major Stuart Wortley, who was able to report at 5.30 P. M. on the 15th, that the whole field had been cleared of wounded. During the battle Captain Hughes, R. A. M. C., on General Buller's staff, was killed by a bullet which severed the innominate artery, and Major Brannigan, R. A. M. C., was shot through the foot.

The hurried notes taken by Sir William at the field and base hospitals, though necessarily incomplete, teem with instances of remarkable recovery from Mauser bullet wounds of the head, the chest and the abdomen. Bullets traversing a lung, and sometimes both lungs, frequently produced no more symptoms than a slight hemoptysis, and almost invariably did well. One man who ran five hundred yards after a bullet had traversed his right lung, entering near the sternum and emerging near the spine, had no other symptoms than a slight hemoptysis, and was doing well when the notes were taken. Abdominal wounds where the positions of the openings of entrance were such as to make it seem impossible that the bullet had not perforated the intestines or stomach made excellent recoveries without symptoms.

The wounds which Sir William saw but a few hours after they were inflicted showed small openings of entrance and exit. Hemorrhage was exceptional, and the subsequent course of the cases was almost invariably aseptic, healing taking place rapidly under a scab. With regard to the remarkable recoveries after abdominal wounds, the conclusion becomes almost inevitable that the small punctures close up without leakage or extravasation. In these cases, as Sir William writes, "either mortal damage is inflicted, when no operation is possible, or the injury is recovered from without inconvenience to the sufferer."

A similar experience with the results of abdominal wounds by the Mauser bullet fell to the lot of the surgeons of the United States Army during the fighting before Santiago. Of head injuries Sir William writes: "The most extraordinary head wounds with damage to the brain seem in many instances to entail no mortal results."

The medical history of the Transvaal War bids fair to add immensely to our knowledge of military surgery, and the prognosis and treatment of wounds by the long-range, small-bore rifle with jacketed bullet. But however great may be the scientific results of this deplorable conflict, the medical profession throughout the world have already reason for pride in the heroism and efficiency of the medical officers on the field. May the work of the Royal Army Medical Corps deal a finishing blow to the fiction that the medical officer, as far as personal exposure is concerned, is a non-combatant! The following note is quoted by the *British Medical Journal* from the *Morning Post* of January 12th, written by the war correspondent of the latter at Magersfontein: "It is most necessary here to say a word in praise of the Royal Army Medical Corps, who faced a hot fire all day long, going close up to the firing line to bring back our wounded. It seems almost incredible that during the day five hundred wounded men should have been brought back by the Medical Corps, though to get them back stretcher bearers and searchers had

to cross and recross a zone of fire at least a mile wide."

A few verses in praise of the Medical Corps end as follows:

"But, here's to the man of the R. A. M. C.,
Buzzing about on the field like a bee,
Tending the wounded where lead's flying hot,
Biting his lip when he gets hisself shot;
Brave as the best of us, hurt and not tell,
Doctor he may be — he's soldier as well."

MEDICAL NOTES.

THE GALLINGER BILL. — Certain changes have been made in the Committee on the District of Columbia, relative to Senator Gallinger's bill for the "Further Prevention of Cruelty of Animals in the District of Columbia." The Committee, as it now stands, consists of Senator James McMillan, Michigan, Chairman, and Senators J. H. Gallinger, New Hampshire; H. C. Hansborough, North Dakota; R. Redfield Proctor, Vermont; J. C. Pritchard, North Carolina; Lucien Baker, Kansas; George L. Wellington, Maryland; S. R. Mallory, Florida; W. V. Sullivan, Mississippi; W. A. Clark, Montana; Thomas S. Martin, Virginia; Wm. M. Stewart, Nevada; and Richard Kenney, Delaware. Personal letters may be addressed to them or to other senators. Petitions should be addressed to the Senate of the United States. For details regarding this bill, see Dr. W. W. Keen's letter in our issue of December 21, 1899.

SMALL-POX IN KENTUCKY. — It is reported that small-pox is prevalent in five counties of the State, and the State Board of Health is without money to meet the epidemic. Resignations of the county boards of health in about a dozen counties in which the disease is the most serious have been received. The cause of these resignations is the lack of money with which to combat the disease. Daily requests for inspectors come from other counties where small-pox undoubtedly exists, but the State Board has no money to send the inspectors, and county authorities refuse to take any action.

THREE CENTENARIANS. — It is reported that Mrs. Phebe D. Hedges, who recently died in New Jersey, was one hundred years and six months old. Her father was a minute man in the Revolution. Mrs Sarah Weed, of Merrimac, Mass., it is claimed, has reached the age of one hundred and two years, and still finds herself interested in passing events. Mrs. Ellen Callahan, a native of County Cavan, Ireland, died in New York on January 22d, at the age of one hundred and one years.

BUBONIC PLAGUE AT ROSARIO AND HONOLULU. — The Argentine Government has issued a decree acknowledging the existence of bubonic plague at Rosario. The Government has decided to isolate the town from the rest of the country. It is announced that Major Taylor, at Honolulu, reports under date of January 15th, that there have been 34 cases of bubonic plague and 27 deaths in Honolulu, and that the situation is serious.

DIED OF A BROKEN HEART (?). — The somewhat extraordinary statement is made that a horse, suddenly separated from his mate, refused food and finally died four days afterwards. The autopsy showed a ruptured heart, from which it is assumed the lesion resulted from the emotional disturbance incident upon the separation. Apart from this doubtful relation of cause and effect, the lesion is of considerable interest.

WIRE-CUTTING PLIERS FOR THE BRITISH ARMY. — A soldier at the front, in writing to a friend, has suggested the desirability of having a limited number of wire-cutting pliers issued to the troops, for the purpose of quickly cutting through barbed wire entanglements while under fire. The experience of the United States Army during the operations about Santiago might have forestalled this criticism.

NO YELLOW FEVER AT ORIZABA. — Cases of so-called yellow fever at Orizaba, Mexico, have been investigated by the Board of Health of the State of Vera Cruz, and they report that the disease is not yellow fever, but an acute form of malarial fever. Nearly 35 per cent. of the cases have been fatal.

FLEAS AND PLAGUE. — It is reported from Sydney, N. S. W., that a man has been infected with plague, probably by inoculation through the bite of a flea.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, January 31, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 93, scarlatina 61, measles 53, typhoid fever 6.

NEW OUT-PATIENT BUILDING FOR CARNEY HOSPITAL. — For a long time the building used as an out-patient department by the Carney Hospital has been inadequate to the increasing demands made upon it. Ground has been purchased in the neighborhood of the hospital, on which it is hoped to erect a substantial four-story brick building, about 51.85 by 55.38 feet, and arranged for ten clinics, with all the necessary facilities for the staff. The money necessary for this project must be raised in part by subscription; $10,000 has been appropriated by the Legislature, under the condition that an equal amount be provided by those in charge of the institution.

NEW BUILDINGS FOR BOARD OF HEALTH HOSPITALS FOR BROOKLINE, MASS. — It is desired to improve the Board of Health Hospitals in the town of Brookline, that they may be able to meet the exigencies of a possible epidemic. The plan is to have three new buildings erected in the southern part of the town on the site of the old buildings.

A NEW MORGUE FOR BOSTON. — The contract for the building of a new and much-needed city morgue on North Grove Street has been awarded, and the work of construction will begin at once. The appropriation amounts to $9,000.

NEW YORK.

A CASE OF AMNESIA. — In the JOURNAL for October 6, 1898, a notice of an interesting case is given, in which a Norwegian, as a result of an injury to the brain, for which he was treated at St. Vincent's Hospital, New York, entirely forgot his native language, although he was able to speak with some difficulty in English. Since then the man has been living in New London, Conn., and a recent account of him published in the newspapers states that he has never regained the use of Norwegian, and that, although in a normal condition in other respects, he still has absolutely no memory of events occurring or persons met with previous to his accident.

ERYSIPELAS AT AN INFIRMARY. — Several cases of erysipelas having appeared in the wards of the S. R. Smith Infirmary, at New Brighton, Staten Island, the principal hospital in the Borough of Richmond, and ordinary methods having failed to check the spread of the disease, the medical staff have determined to isolate all the erysipelas patients in the contagious wing of the hospital. Consequently it has been necessary to give notice that no more cases of diphtheria or other contagious disease can be received at the institution for the present, and hospital cases of this character will have to be taken to Manhattan or Brooklyn for treatment.

A BOOK ON MUNICIPAL GOVERNMENT. — Announcement is made that Mr. Bird S. Coler, Controller of the City of New York, is about to publish an important work entitled "Municipal Government," in which he will set forth the practical working of the new charter as regards the various city departments, and point out such defects in the charter as have shown themselves in its administration. It is understood that in it he devotes much attention to the water supply, present and future, and to a discussion of municipal charities and of private charitable institutions, and their relations to the public and to the City Government.

A BEQUEST TO CORNELL. — The twentieth annual dinner of the Cornell University Alumni Association, of New York, was held on January 26th. The guest of honor was Dr. Jacob Guild Schurman, President of the University, and in the course of his remarks he announced that an anonymous gift of $80,000 had recently been received for the erection of a building devoted to the study of anatomy and physiology.

ARMY NOTES.

STUDY OF TROPICAL DISEASES IN THE PHILIPPINES. — By direction of the Secretary of War, a board of medical officers, consisting of Lieutenants Richard H. Strong and William J. Calvert, assistant surgeons, and Acting Assistant Surgeon Joseph J. Curry, United States Army, has been appointed to meet at one of the general hospitals near Manila, Philippine Islands, for the purpose of studying tropical diseases as they occur in those islands. The board is to receive its instructions from the Surgeon-General and will be under the immediate direction of the chief surgeon at Manila. Drs. Strong and Calvert are graduates of Johns Hopkins University Medical Department, and have devoted considerable time to the study of pathology and bacteriology. Dr. Curry has been in the service since the outbreak of the war with Spain and has served as pathologist and bacteriologist at Chickamauga Park and at the general hospitals at Fort Myer, Va., Savannah, Ga., and Manila, P. I. He was formerly attached to the pathological department of the Boston City Hospital.

DENTISTS AND VETERINARIANS FOR THE ARMY. — Strong efforts are being made to induce congressional action establishing a corps of dental surgeons in the military establishment. The latest proposal is to appoint a dental surgeon with the rank of major to each 1,000 men. As the grade of major is attained by the army medical officer only after eighteen or twenty years' service, it is scarcely possible that any such discrimination in favor of dental surgeons will be made. The services of dentists are much needed by troops serving on foreign stations and it is probable that Congress will authorize the hiring of competent men to satisfy this need, under the same regulations as those under which contract surgeons are now employed. It is also urged that veterinary surgeons should be admitted as commissioned officers. The plan is said to be opposed by Surgeon-General Sternberg and Adjutant-General Corbin.

FORT BAYARD HOSPITAL FOR TUBERCULOSIS. — The post of Fort Bayard, New Mexico, has been discontinued as a military station for troops and all the buildings pertaining thereto have been turned over to the Surgeon-General for use in connection with the general hospital at that post, established for the treatment of pulmonary tuberculosis occurring in officers and enlisted men of the army. We have already had occasion to refer editorially to this action of the War Department as a needed and most desirable means of increasing the efficiency of the medical service.

Miscellany.

PRECAUTIONS AGAINST THE IMPORTATION OF PLAGUE.

WE learn from the *Lancet* that the Local Government Board for Scotland, in a circular letter dated January 15, 1900, again calls the attention of local sanitary authorities to the presence of plague in Portugal and the necessity for carrying out "with especial care" the measures in force in these islands for preventing the importation of infection. Their notice is specially directed to a general order issued by the Commissioners of Customs on October 31st of last year. The object of that order was "to make certain that in carrying out the regulations of the Board the

medical officer of health shall receive the greatest possible assistance from officers of customs," and it is pointed out that, on one occasion at least, such assistance was actually declined by an inspector of customs. The mechanism adopted for joint action by the medical officer of health and customs officials for dealing with arrivals from infected ports is briefly as follows: The officers of customs look to the medical officer of health to inform them from time to time of any particular ports or countries, the vessels arriving from which he would desire to visit. In this connection it is pointed out in the letter of the Board that "the earliest information which would usually be available to this end is that which would be obtained by a regular examination of the news telegraphed from abroad for the purposes of the daily press. On the other hand, the officers of customs will, in their turn, give the medical officer of health any information which they may possess respecting the arrival or impending arrrival of any ships from the ports or countries in question. The term "medical officer of health," it may be noted, includes any duly qualified medical practitioner appointed or employed by a local authority to act in the execution of the orders relating to plague. Attention is also drawn to the possibility of the infection of plague being carried by some of the lower animals, and especially by "rats, mice, and, by natural sequence, cats," and the necessity for inquiring into the evidences of disease in these animals and taking measures for destroying them if occasion should arise. That rats can and do suffer from plague and are an important means of diffusing infection appears no longer to admit of doubt. The susceptibility of mice appears to be very much less marked, and these animals would seem to be far less active agents in the spread of plague than rats. There is, however, evidence that they can aid in spreading the disease and it is believed that they did so to some extent in Formosa, in Jeddah, in Alexandria, and perhaps elsewhere. Cats, the third group of animals mentioned, appear to be even less susceptible than mice. Scattered samples of what have been believed to be attacks of plague in cats have been published from Poona Worlee, Jawalapur and elsewhere in India, and from Hong Kong, Jeddah, Mongolia, Hoihow, Mauritius and Oporto; but it is perhaps open to question whether in any instance there has been scientific proof that the animals have in truth suffered from the plague.

THE DISCOVERY OF SCABIES.

ALTHOUGH, as far back as the twelfth century, Avenzoar described a disease of the skin characterized by the presence beneath the epidermis of animalculæ resembling lice, so small as scarcely to be visible, which, he remarked, could be extracted by scratching the skin, the disease now universally known as scabies was, even as recently as this century, regarded as a constitutional affection associated with cachexia and inflammation. It appears, however, that Rabelais, who, though a doctor of medicine, is better known as a political writer than as a physician, was well acquainted with the disease, and was perfectly cognizant of its nature, contagiousness and treatment. It is narrated indeed in his famous work that one of the ancestors of Pantagruel was "exceedingly expert in removing worms from the hands," and elsewhere Rabelais laments the death of a medical friend who died in consequence of his having accidentally wounded himself in removing one of these worms with a paper knife. The re-discovery of itch in France dates from 1835, when a medical student demonstrated to Alibert, incredulous, how in his native land of Corsica the peasants withdrew the parasite by the aid of a needle, a feat which he repeated in Alibert's clinic. In a recent monograph on the subject it is shown that the disease has been discovered and re-discovered some half-dozen times, at intervals of centuries. How often is this the case with medical discoveries? The worst of it is that treatments which have been again and again discovered and dismissed as useless or injurious are from time to time once more brought forward only to excite and cause fresh disappointment. If contemporary discoverers would only take the trouble to consult Neale's Digest or the *Index Medicus* before launching their fancied innovations, they would often be dissuaded from encumbering medical literature with their "mare's nests." — *Medical Press.*

TYPHOID INOCULATIONS.

AN interesting article by Dr. A. E. Wright and Major W. B. Leishman, professor and assistant professor of pathology at the Army Medical School, Netley, on the results which have been obtained by the anti-typhoid inoculations and on the methods employed in the preparation of the vaccine may be found in the *British Medical Journal*, January 20th. Of 2,835 men inoculated in India from a force of about 11,000 troops, and a large proportion of those inoculated were unseasoned recruits especially prone to typhoid, only 27, or .95 per cent., took typhoid fever and only 5, or .2 per cent., died, whilst of 8,460 uninoculated men, many of whom had passed safely through previous exposure, 213, or 2.5 per cent, contracted the disease, and 23, or .34 per cent., died. These observers are inclined to the belief that the protection of inoculation may last at least eighteen months, and that the type of disease when contracted after inoculation is perhaps a mild one.

The conditions for keeping and preparing the material for inoculation were not in all respects favorable, otherwise possibly even better results might have been obtained.

Correspondence.

ASEPTIC MILK.

AUGUSTA, ME., January 23, 1900.

MR. EDITOR: — At the suggestion of the municipal authorities of Augusta, Me., I began in June, 1899, an investigation of the milk supply of that city, and some facts and conclusions arrived at by myself and co-workers, as set forth in my report, may be of interest to the profession.

That milk is an almost perfect culture medium for all pathogenic bacteria, and consequently should be handled under well-studied antiseptic precautions, is a fact well known but too much ignored by the profession which aims at saving life, especially in smaller cities and villages. Milk occupies on our diet list a unique position, for several reasons: (1) It contains no refuse matter; (2) It contains members of all the essential food elements, namely: Albu-

mins are represented by casein and lactalbumin, which amounts on an average in 100 specimens examined by the writer to 3.4 per cent. Fats are represented by butter fat, about 3.7 per cent.; while the hydrocarbons are represented by milk sugar, averaging 4.7 per cent.; lastly, we have in the "ash" the inorganic salts. It occupies a unique position for another very important reason, in that it is practically the only food staple taken into the stomach unsterilized by cooking, and no food needs sterilization more.

Ernest Finchman, of London, makes a statement, as he says, largely on theoretical grounds, that "milk immediately taken from the cow's udder contains no bacteria, but before it is fairly settled in the pail it contains more than 10,000 to the cubic centimetre." I must record a different result from my observations, for in every instance where, under the strictest antiseptic precautions, I have withdrawn milk from the cow, I have found bacteria of various kinds; most conspicuous were "bacillus coli communis," which could not have come from outside contamination. My method of "milking" was as follows: The udder was rendered as nearly surgically clean as soap, alcohol, permanganate of potash, and corrosive sublimate would render it; then a sterilized silver canula with a sterilized rubber tube attached, with the distal end closed, was inserted into the udder. The milk was allowed to run for two minutes, and then a portion was received into sterilized flasks, and cultures made immediately. Some of the bacteria found were non-pathogenic, such as the oidium lactis, but in one specimen tubercle bacilli were clearly demonstrated, and in several the bacillus coli communis. I will not here enumerate all the varieties found by the tests.

There is nothing surprising in finding bacteria in the milk ducts, when we stop to consider that the udder is by no means an hermetically sealed part. Bacteria of any sort which happen to be in contact readily gain access and follow up the lacteal ducts even to the minute ramification of the milk gland. If the gentle bovine happens to be wading in a swamp, or lying in a dung heap, both of which customs she is prone to indulge in at favoring opportunities, her flanks, hair and udders, of course, swarm with bacteria. Certain micro-organisms, for instance, that which produces lactic acid fermentation and those which determine the color of milk, exist normally in the milk. The oidium lactis may be well likened to the yeast germ, and in itself is equally harmless, as are also the parachromophoric bacteria whose products color the milk. If the normally existing bacteria in milk were all that we had to deal with, fewer children would die with cholera infantum, ileocolitis and other zymotic diseases.

Probably the one bacillus giving us the most trouble is bacillus coli communis, which, as is well known, exists normally in the colon of all warm-blooded animals, and when existing to excess gives us diarrhea, dysentery, ileocolitis, cholera infantum, or perhaps only chronic intestinal indigestion of a milder degree. It is vastly different to possess a small, or we might say a normal, number of these bacteria in the intestine, or have an excess of the same. The animal economy can cope safely with a certain amount of poison, or a certain number of bacteria, but beyond this point, differing as to the "vital resistance," we may not go with impunity.

Were it possible for all infants brought up on artificial food to receive at all times a supply of cows' milk which was free from putrefactive and pathogenic bacteria, a result would be obtained beside which all other sanitary and hygienic improvements of the past half century would seem insignificant.

Leipsic, in a paper presented to the Düsseldorf Congress in Berlin, gives the following résumé: "The continuous use of milk sterilized by heat by infants leads to a large number of cases of impaired digestion and nutrition, anemia, rhachitis and scurvy, and in any case a predisposition to any and all infections." Of refrigeration nothing need be said, except that only during continuance of the low temperature a slight retarding of the development of bacteria is accomplished. The sterilization of milk by chemical means as it has been practised by milkmen, dairymen and "contractors," has been very crude and faulty. Good reason for objections to the use of boracic acid, bicarbonate of sodium and salicylic acid exists, based on clinical and laboratory experimentation. The one agent, bicarbonate of sodium, which appears perhaps the most harmless is by no means the least harmful, though in itself non-toxic. It is a very feeble germicide, but what it accomplishes in milk which gives a false sense of security is to neutralize the acids produced by fermentation, while not retarding the development of the germs which produce the acids. In other words, it puts a mask on the milk, so that it does not present the gross badness with which we associate decomposition, while at the same time all sorts of bacteria may be swarming in the fluid. Boracic acid, more germicidal and also practically non-toxic, when in milk in sufficient amount to prevent development of bacteria, also has an inhibitory effect on the digestive enzymes. Salicylate of sodium has a place in our armamentarium, but it is removed from the dairy and kitchen, for the same reasons that apply to boracic acid.

There has recently been brought forward by Reinhardt, of Berlin, a chemical which combines some very valuable properties, hitherto uncombined in any other single substance. To it he gives the chemical name "iso-ethyline!" It is formed something after the manner of formaldehyde, that is, by destructive distillation of ethylic alcohol. While it possesses some of the characters of formaldehyde it is lacking in other essentials. The exact architecture of the chemical equation is still a matter of doubt, though the properties have been studied for two or three years. It is volatile at temperatures above 100° F. Its germicidal action is slightly less than formaldehyde. It responds feebly to the ferric-chloride test for formaldehyde, as do two or three other analogous bodies. I have recently made some experiments with it on animals, and cannot learn that it inhibits digestion in strengths sufficient to entirely stop development of bacteria in milk and bouillon. It is effectual only during its presence, and this in part explains the reason that it has no inhibitory action on digestion, for the body temperature is sufficient to at once volatilize it.

Even though this substance "iso-ethyline" possess all the advantages we hope for it, it will be looked upon with some doubt, because many of the chemical agents hitherto used in milk are in disrepute, and for good reasons. It would seem from some recent experiments that we were nearing the proper solution of the "antiseptic milk" question. It is certainly a subject worthy of the most careful study and research, and anything new which bears upon the subject should be given to the profession.

Very truly yours,
G. M. RANDALL, M.D.

METEOROLOGICAL RECORD

For the week ending January 20th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		W'th'r. *		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S...14	30.04	29	34	24	68	93	80	W.	S.	10	4	C.	N.	.04
M..15	30.30	34	38	30	84	82	83	N.	S.	8	8	O.	O.	.04
T...16	30.12	41	48	34	88	72	80	S.	N.W.	12	14	O.	C.	.12
W..17	30.59	30	35	24	57	62	60	N.	E.	15	11	C.	O.	
T...18	30.45	27	34	20	73	74	74	N.W.	S.E.	4	2	N.	O.	
F...19	30.05	46	60	33	87	85	86	S.W.	S.W.	6	10	G.	C.	
S...20	29.48	48	56	39	98	88	93	E.	S.W.	4	16	G.	O.	.43
☞	30.15		43	29			79							.63

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☞ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JANUARY 20, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Typhoid fever.	Diphtheria and croup.	Measles.
New York	3,550,053	1351	450	21.70	19.60	.70	3.64	1.96
Chicago	1,619,726	—	—	—	—	—	—	—
Philadelphia	1,266,832	525	160	21.47	16.34	1.52	7.22	.19
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	222	58	28.80	19.80	1.35	7.65	1.35
Baltimore	506,393	186	52	18.36	21.60	1.62	3.78	.54
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	359,000	—	—	—	—	—	—	—
Pittsburg	305,000	128	42	15.60	17.94	7.80	.78	1.53
Washington	277,000	106	27	13.16	22.56	1.88	—	—
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	43	—	60.58	39.61	2.33	6.99	—
Nashville	87,754	35	8	22.88	28.60	—	—	—
Charleston	65,165	26	6	7.70	—	3.85	3.85	—
Worcester	111,732	37	12	18.90	10.80	—	2.70	2.70
Fall River	103,142	36	7	27.70	13.85	2.77	—	—
Cambridge	92,920	35	12	22.80	8.55	—	2.85	—
Lowell	90,114	36	5	22.16	22.16	2.77	2.77	—
New Bedford	70,511	14	6	14.28	—	7.14	—	—
Lynn	68 218	13	2	15.38	—	—	—	—
Somerville	64,394	17	3	35.24	23.52	—	17.62	—
Lawrence	59,073	21	9	9.42	28.56	—	—	—
Springfield	58,266	20	8	20.00	35.00	—	10.00	5.00
Holyoke	44,510	8	1	12.50	25.00	—	—	—
Brockton	38,759	6	2	33.33	33.33	16.66	—	—
Salem	37,723	14	5	—	28.56	—	—	—
Malden	36,421	17	2	11.76	11.76	5.88	—	—
Chelsea	34,232	12	2	16.66	—	—	—	—
Haverhill	32,651	9	3	33.33	11.11	—	11.11	—
Gloucester	31,426	7	1	28.56	—	—	—	—
Fitchburg	30,523	10	1	—	20.00	—	—	—
Newton	30,461	7	3	28.54	—	—	14.28	—
Taunton	28,527	11	2	18.18	27.27	—	—	—
Everett	28,102	6	2	—	50.00	—	—	—
Quincy	24,578	8	2	12.50	25.00	—	—	—
Pittsfield	23,421	7	2	14.28	14.28	—	—	—
Waltham	22,791	7	2	—	14.28	—	—	—
North Adams	21,883	6	1	50.00	16.66	—	—	—
Chicopee	18,316	9	4	11.11	—	—	—	—
Medford	17,190	6	—	33.33	—	—	—	—
Newburyport	15,036	3	1	—	—	—	—	—
Melrose	14,721	—	—	—	—	—	—	—

Deaths reported 3,015; under five years of age 1,008; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 565, acute lung diseases 593, diphtheria and croup 128, measles 50, typhoid fever 43, scarlet fever 27, whooping-cough 19, cerebrospinal meningitis 19, diarrheal diseases 17, erysipelas 14.

From scarlet fever New York 13, Boston 6, Philadelphia 4, Cambridge 2, Washington and Worcester 1 each. From whooping-cough New York 11, Philadelphia and Baltimore 2 each, Boston, Nashville, Fall River and Chelsea 1 each. From cerebrospinal meningitis New York and Worcester 4 each Somerville and Gloucester 2 each, Boston, Baltimore, Washington, Providence, Lynn and Amesbury 1 each. From diarrheal diseases Fall River 4, Providence 3, New York, Philadelphia, Pittsburg and Nashville 2 each, New Bedford 1. From erysipelas New York 7, Boston 3, Philadelphia 2, Baltimore and Lowell 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,236, for the week ending January 13th, the death-rate was 20.1. Deaths reported 6,074: acute diseases of the respiratory organs (London) 994, measles 142, whooping-cough 105, diphtheria 89, fever 56, diarrhea 31, scarlet fever 27, small-pox (Hull) 3.

The death-rates ranged from 15.6 in Burnley to 44.9 in Nottingham: Birmingham 33.6, Bradford 20.0, Bristol 20.1, Gateshead 22.4, Hull 22.3, Leeds 21.5, Liverpool 34.6, London 33.3, Manchester 23.0, Newcastle-on-Tyne 22.0, Sheffield 25.5, West Ham 22.2.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING JANUARY 27, 1900.

H. N. T. HARRIS, surgeon, ordered to the "Albany" *via* the "Prairie."

L. L. VON WEDEKIND, passed assistant surgeon, ordered to duty on the "Richmond."

(CHANGE BY CABLE FROM ASIATIC STATION.)

R. C. HOLCOMB, assistant surgeon, detached from the "Solace" and ordered to the "Helena."

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING JANUARY 25, 1900.

WILLIAMS, L. L., surgeon. Granted extension of leave of absence for ten days. January 23, 1900.

PETTUS, W. J., surgeon. Granted leave of absence for one month and twenty-nine days from February 10th. January 22, 1900.

PARKER, H. B., assistant surgeon. Directed to report at Washington, D. C., for special temporary duty. January 23, 1900.

FRICK, JOHN, acting assistant surgeon. Granted leave of absence for thirty days from February 28th. January 25, 1900.

BOARD CONVENED.

Board convened to meet at 378 Washington Street, New York, N. Y., on Wednesday, February 7, 1900, for the purpose of examining candidates for appointment as assistant surgeons in the Service. Detail for the Board; Surgeon H. W. AUSTIN, Chairman; Surgeons C. E. BANKS and L. L. WILLIAMS, Recorder.

SOCIETY NOTICES.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. — A regular meeting of the Society will be held at the Medical Library, 19 Boylston Place, on Monday, February 5th, at 8 o'clock.

Subject: "Splenic Anemia." Dr. James M. Jackson will open the discussion with a short paper and report of a case. Drs. F. C. Shattuck, Hewes, Morse, Wentworth, Fitz and others will report cases. Any member having a case is urged to be present and report it.

Dr. Jas. S. Stone will read a paper entitled, "Injury to the Shoulder-joint at Birth."

ARTHUR K. STONE, M.D., *Secretary*, 657 Boylston Street.

SUFFOLK DISTRICT MEDICAL SOCIETY, SURGICAL SECTION. — The Surgical Section will meet at the Medical Library, 19 Boylston Place, on Wednesday evening, February 7, 1900, at 8.15 o'clock.

Papers: "The Operative Surgery of the Knee-joint for other than Tubercular Disease," by Dr. J. E. Goldthwait.

"Varieties of Bacteria in Abdominal Infections," by Dr. Daniel Fiske Jones.

F. G. BALCH, M.D., *Secretary*, 279 Clarendon St.

MASSACHUSETTS MEDICO-LEGAL SOCIETY. — A regular meeting will be held on Wednesday, February 7th, at the Medical Library, 19 Boylston Place, at 1 o'clock, P. M.

The following papers will be read:

"Declarations of Persons Immediately Preceding Death," by District Attorney M. J. Sughrue.

"The Marks Produced by Pistol Shots," by Dr. G. deN. Hough.

"A Case of Extra-uterine Pregnancy," by Dr. F. Holyoke.

Members of the medical profession are cordially invited.

JULIAN A. MEAD, M.D., *Secretary*.

NATIONAL PURE FOOD AND DRUG CONGRESS. — The third annual meeting of this Association will be held in Washington, D. C., beginning Wednesday, March 7, 1900.

RESIGNATION.

CHARLES G. CUMSTON, M.D., has resigned his position of professor of surgical pathology in the Tufts College Medical School.

RECENT DEATHS.

CLARA COOLIDGE WILLIAMS, relict of the late Dr. Lewis Williams and aunt of Dr. Roswell Park, of Buffalo, died in Pomfret, Conn., January 22d, aged eighty years, one month and twenty-nine days.

JOHN CARGILL SHAW, M.D., professor of diseases of the nervous system at the Long Island College Hospital, Brooklyn, died on January 23d, of pneumonia, resulting from influenza. He was fifty-five years of age, and was born in the Island of Jamaica, West Indies. He was graduated from the College of Physicians and Surgeons, New York, in 1874. Having won distinction as a specialist in nervous diseases he was appointed superintendent of the Kings County Insane Asylum, where, by the introduction of modern methods, he revolutionized the treatment previously in vogue there. Later he returned to private practice and was successively elected president of the New York Neurological Society, the Kings County Medical Society and the Pathological Society. At the time of his death he was consulting neurologist to the Kings County Hospital, St. John's Hospital, St. Catherine's Hospital and other Brooklyn institutions.

WILLIAM S. HOUSE, M.D., a prominent physician of Rockland County, N. Y., died at his home in Haverstraw, on the Hudson, on January 27th, of apoplexy. He was in the sixty-third year of his age.

BOOKS AND PAMPHLETS RECEIVED.

Report of the Commissioner of Education for the Year 1897-98. Vol. II.

Ueber Tanocol, ein neues Darmadstringens. Von Dr. Goliner, Erfurt. 1899.

Twentieth Annual Report of the Associated Charities of Boston, November, 1899.

Old Times and New. By Sara Hammond Palfrey. Boston: W. B. Clarke Co. 1899.

Massachusetts Institute of Technology, Boston, Twenty-fifth Annual Catalogue, 1899–1900.

Preliminary Catalogue of Plants Poisonous to Stock. By V. K. Chesnut, B.S. Reprint. 1898.

Sixth Annual Report on Births, Marriages, Divorces and Deaths in the State of Maine, 1897.

Over 3,000 Questions on Laws of the Human Body or Physiology. By Prof. J. P. Schmitz, M.D.

The Harvard University Catalogue, 1899-1900. Cambridge: Published by the University. 1900.

Historique des Applications Pratiques de la Phonétique Expérimentale. Abbé Rousselot, Paris. 1899.

A Plea for the Treatment of Typhoid Fever by Cold Baths. By Charles Shattinger, M.D. Reprint. 1899.

New War Map of the Transvaal and South Africa, corrected to date, 1899. Philadelphia: Published by J. L. Smith.

Ein modificirter "Cauterisator prostatae" zur Bottini'schen Operation. Von Dr. Albert Freudenberg, Berlin. 1899.

Brain in Relation to Mind. By J. Sanderson Christison, M.D., author of "Crime and Criminals," etc. Chicago. 1899.

Transactions of the American Orthopedic Association, Vol. XII. Philadelphia: Published by the Association. 1899.

The Aristophilon: A Nemesis of Faith. By Frank D. Bullard, A.M., M.D. Chicago: R. R. Donnelley & Sons Co. 1899.

The Lute and Lays. By Charles Stuart Welles, M.D. New York: The Macmillan Co. London: Geo. Bell & Sons. 1899.

Two Cases of Spontaneous Rupture of the Heart with Demonstrations of Specimens. By A. W. Hoisholt, M.D. Reprint. 1899.

List of Local Boards and Bureaus of Health in Pennsylvania. Extracted from the Fourteenth Annual Report of the Board, 1898-99.

Fifth Annual Meeting of the Associated Health Authorities of Pennsylvania. Extracted from the Fourteenth Annual Report, 1898.

Lessons from Two Hundred and Twenty-four Consecutive Abdominal Sections. By J. H. Carstens, M.D., Detroit, Mich. Reprint. 1899.

A Case of Ectopic Gestation; Rupture; Hæmorrhage; Operation; Recovery. By J. M. Elder, B.A., M.D., C.M., Montreal. Reprint. 1899.

Transactions of the Medical Society of the State of California, Twenty-ninth Annual Session, Vol. XXIX, April, 1899. Published by the Society.

Transactions of the American Association of Obstetricians and Gynecologists, Vol. XI, for the Year 1898. Philadelphia: Wm. J. Dornan. 1899.

How Surgery Became a Profession in London. By D'Arcy Power, M.A., F.S.A., F.R.C.S. (Eng.). London: Medical Magazine Association. 1899.

International Clinics. Edited by Judson Daland, M.D. (Univ. of Pa.), Philadelphia. Volume III. Ninth Series, 1899. Philadelphia: J. B. Lippincott Co. 1899.

The Etiology and Classification of Cystitis. Excision of High Rectal Carcinoma without Sacral Resection. By N. Senn, M.D., Ph.D., LL.D., Chicago. Reprints. 1899.

The Wisdom of Surgical Interference in Hæmatemesis and Melæna from Gastric and Duodenal Ulcer. By G. E. Armstrong, M.D., Montreal. Reprint. 1899.

Restoration of the Conjunctival Cul-de-sac in a Case of Total Symblepharon, by Means of Thiersch Skin Grafts. By Charles H. May, M.D., New York. Reprint. 1899.

A Colostomy, A Krauke Operation and a Circular Enterorrhaphy, all on the same Patient. Osteomyelitis. By Horace Packard, M.D., Boston, Mass. Reprints. 1899.

Mental Affections: An Introduction to the Study of Insanity. By John MacPherson, M.D., F.R.C.P.E. London: Macmillan & Co., Ltd. New York: The Macmillan Co. 1899.

The Vital Statistics of Massachusetts for 1897, with a Life Table, based upon the Experience of the Five-year Period 1893-97. By Samuel W. Abbott, M.D., Boston. Reprint. 1898.

Annual Report of the Supervising Surgeon-General of the Marine-Hospital Service of the United States for the Fiscal Year 1897. Washington: Government Printing Office. 1899.

A Blank Book for Autopsy-Protocols. By Alfred Scott Warthin, M.D., Ph.D., Assistant Professor of Pathology in the University of Michigan. Ann Arbor, Mich.: George Wahr. 1899.

An Investigation of the Action of Water upon Lead, Tin and Zinc, with Especial Reference to the Use of Lead Pipes with Massachusetts Water Supplies. By H. W. Clark. Reprint. 1899.

Surgery: A Treatise for Students and Practitioners. By Thomas Pickering Pick, Consulting Surgeon to St. George's Hospital, etc. New York and Bombay: Longmans, Green & Co. 1899.

Annual and Analytical Cyclopædia of Practical Medicine By Charles E. de M. Sajous, M.D., and one hundred associate editors. Vol. IV. Philadelphia, New York, Chicago: The F. A. Davis Co. 1899.

Gastroptosis: Report of a Case in which a New Operation was Undertaken and the Patient Greatly Improved. By Alfred Stengel, M.D., and Henry D. Beyea, M.D., Philadelphia. Reprint. 1899.

Methods and Results in 450 Cases of Fracture of the Fore-arm Bones. Methods and Results in 175 Cases of Simple Fracture of the Femur. By Charles A. Powers, M.D., Denver, Col. Reprint. 1899.

Transactions of the American Surgical Association, Volume XVII. Edited by De Forest Willard, A.M., M.D., Ph.D., Recorder of the Association. Printed for the Association. Philadelphia: William J. Dornan. 1899.

Essentials of Practical Diagnosis of the Thorax. By Arthur M. Corwin, A.M., M.D., Instructor of Physical Diagnosis in Rush Medical College, etc. Third edition, revised and enlarged. Philadelphia: W. B. Saunders. 1899.

Operative Surgery. By Joseph D. Bryant, M.D., Professor of the Principles and Practice of Surgery, Operative and Clinical Surgery, University and Bellevue Hospital Medical College, etc. Vol. I. New York: D. Appleton & Co. 1899.

Diet and Food Considered in Relation to Strength and Power of Endurance, Training and Athletics. By Alexander Haig, M.A., M.D. (Oxon.), F.R.C.P. Second edition. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1900.

Symposium on the Pathology of the Diseases of the Cardio-Vascular System. The Blood in Diseases of the Cardio-Vascular System. The Medical Treatment of Movable Kidney. By Alfred Stengel, M.D., Philadelphia. Reprints. 1899.

Epistaxis Spontanées (A Répétition) (Travail de l'Institut de Laryngologie et Orthoponie). La Neurasthénie et Certaines Affections du Nez et de la Gorge (Travail de l'Institut de Laryngologie et Orthophonie). Par Marcel Natier, Paris. 1899.

Warner's Pocket Medical Dictionary of To-day, comprising Pronunciation and Definition of 10,000 Essential Words and Terms used in Medicine and Associated Sciences, etc. By William R. Warner. Philadelphia: William R. Warner & Co. 1898.

Case of Laceration of the Intestine with Rupture of the Mesenteric Artery without a Skin Wound. Some Remarks on the Symptoms of Bronchocele and the Results of Operative Treatment. By Francis J. Shepherd, M.D., Montreal. Reprints. 1899.

Forty-fourth Annual Report of the Executive Committee of the Hartford Hospital, including the Fifteenth Annual Report of the Old People's Home and the Twenty-second Annual Report of the Hartford Hospital Training School for Nurses. 1899.

Le Bégaiement dans la Littérature Médicale. Etiologie et Traitement de Certains Troubles Vocaux (Travail de l'Institut de Laryngologie et Orthophonie). Note sur le Traitement des Aphonies et Dysphonies Nerveuses. Paul Olivier, Paris. 1899.

Ringworm and Some Other Scalp Affections; Their Cause and Cure. By Haydn Brown, L.R.C.P., etc. (Edin.), Fellow of the Royal Institute of Public Health and of the Incorporated Society of Medical Officers of Health. London: J. & A. Churchill. 1899.

Clinical Lectures on Neurasthenia. By Thomas D. Savill, M.D., Physician to the West End Hospital for Diseases of the Nervous System, London; Examiner in Clinical Medicine in the University of Glasgow, etc. New York: William Wood & Co. 1899.

The Schott Methods of the Treatment of Chronic Diseases of the Heart, with an Account of the Nauheim Baths and of the Therapeutic Exercises, illustrated. By W. Bezly Thorne, M.D., M.R.C.P. Third edition. Philadelphia: P. Blakiston's Son & Co. 1899.

Ovarian Multilocular Cystic Tumor, Existing for Thirty-five Years without destroying Life, the Woman Dying from Influenzal Bronchitis at the Age of Seventy-four Years; Repeated Tappings. By De Forest Willard, M.D., and S. M. Wilson, M.D. Reprint. 1899.

A Text-Book of the Practice of Medicine. By James M. Anders, M.D., Ph.D., LL.D., Professor of the Practice of Medicine and of Clinical Medicine in the Medico-Chirurgical College, Philadelphia, etc. Illustrated. Third edition, revised. Philadelphia: W. B. Saunders. 1899.

A Manual of Modern Gastric Methods, Chemical, Physical and Therapeutical. By A. Lockhart Gillespie, M.D., F.R.C.P.E.,

F.R.S.E. With a chapter upon The Mechanical Methods Used in Young Children. By John Thomson, M.D., F.R.C.P. (Edin.). New York: William Wood & Co. 1899.

Colpoperineorrhaphy and the Structures Involved in the Vagina and Perineum and How to Mend Them. By Byron Robinson, B.S., M.D., Chicago, Ill., Professor in Chicago Post-Graduate School of Gynecology and Abdominal Surgery, etc. Chicago: The Clinic Publishing Co. 1899.

An American Text-Book of Surgery, for Practitioners and Students. By Phineas S. Connor, M.D., Frederic S. Dennis, M.D., and nine others. Edited by Wm. W. Keen, M.D., LL.D., and J. William White, M.D., Ph.D. Third edition, thoroughly revised. Philadelphia: W. B. Saunders. 1899.

On the Prevention of Eye Accidents Occurring in Trades. An address delivered at the opening of the Section of Ophthalmology at the Annual Meeting of the British Medical Association at Portsmouth, August, 1899. By Simeon Snell, F.R.C.S. (Edin.). London: John Bale, Sons & Danielsson, Ltd. 1899.

A Practical Treatise on Materia Medica and Therapeutics. By Roberts Bartholow, M.A., M.D., LL.D., Professor Emeritus of Materia Medica, General Therapeutics and Hygiene in the Jefferson Medical College of Philadelphia, etc. Tenth edition, revised and enlarged. New York: D. Appleton & Co. 1899.

Introduction to the Outlines of the Principles of Differential Diagnosis with Clinical Memoranda. By Fred. J. Smith, M.A., M.D. (Oxon.), F.R.C.P. (Lond.), Physician (with care of out-patients) and Senior Pathologist to the London Hospital. New York: The Macmillan Co. London: Macmillan & Co., Ltd. 1899.

Refraction and How to Refract, including Sections on Optics, Retinoscopy, the Fitting of Spectacles and Eyeglasses, etc. By James Thorington, A.M., M.D., Adjunct Professor of Ophthalmology in the Philadelphia Polyclinic and College for Graduates in Medicine, etc. Philadelphia: P. Blakiston's Son & Co. 1900.

Bacteria, Especially as they are Related to the Economy of Nature, to Industrial Processes and to the Public Health. By George Newman, M.D., F.R.S. (Edin.), D.P.H. (Camb.), etc., Demonstrator of Bacteriology in King's College, London. Illustrated. New York: G. P. Putnam's Sons. London: John Murray. 1899.

The Dispensatory of the United States of America. By George B. Wood, M.D., and Franklin Bache, M.D. Eighteenth edition, thoroughly revised and largely rewritten, with illustrations. By H. C. Wood, M.D., LL.D., Joseph P. Remington, Ph.M., F.C.S., and Samuel P. Sadtler, Ph.D., F.C.S. Philadelphia: J. B. Lippincott Co. 1899.

Two Lectures on the Temples and Ritual of Asklepios at Epidaurus and Athens, delivered at the Royal Institution of Great Britain. By Richard Caton, M.D., F.R.C.P., Honorary Physician, Liverpool Royal Infirmary: Emeritus Professor of Physiology, University College, Liverpool. Reprinted from "Otia Merseiana." 1899.

A Text-Book of Materia Medica, Therapeutics and Pharmacology. By George Frank Butler, Ph.G., M.D., Professor of Materia Medica and Clinical Medicine in the College of Physicians and Surgeons, Medical Department of the University of Illinois, etc. Third edition, thoroughly revised. Philadelphia: W. B. Saunders. 1899.

A Contribution to the Surgery of Fractures and Dislocations of the Upper Extremity, based upon an Analysis of about Seven Hundred Consecutive Cases Observed at the Manchester Royal Infirmary. By J. E. Platt, M.S. (Lond.), F R.C.S., Honorary Surgeon to the Hulme Dispensary, etc. Illustrated by 23 drawings and skiagrams. London: H. K. Lewis. 1899.

Precautions against Small-pox. Precautions to be Adopted by Funeral Directors to Prevent the Spread of Contagious and Infectious Diseases, including the Law establishing a State Board of Undertakers. Precautions against the Plague. Laws for the Better Protection of Life and Health, passed by the Legislature of 1897. Pennsylvania Board of Health.

Treatise on Orthopedic Surgery. By Edward H. Bradford, M.D., Surgeon to the Children's Hospital and to the Samaritan Hospital; Assistant Professor of Orthopedic Surgery, Harvard Medical School, and Robert W. Lovett, M.D., Assistant Surgeon to the Children's Hospital; Surgeon to the Infants' Hospital. Second revised edition. New York: William Wood & Co. 1899.

Saunders' Question-Compends, No. 11: Essentials of Diseases of the Skin, including the Syphilodermata, arranged in the Form of Questions and Answers prepared especially for Students of Medicine. By Henry W. Stelwagon, M.D., Ph.D., Clinical Professor of Dermatology in the Jefferson Medical College, etc. Fourth edition. Philadelphia: W. B. Saunders. 1899.

System of Diseases of the Eye. By American, British, Dutch, French, German and Spanish authors. Edited by William F. Norris, A.M., M.D., and Charles A. Oliver, A.M., M.D., Philadelphia, Pa. Volume IV. Motor Apparatus, Cornea, Lens, Refraction, Medical Ophthalmology. With 51 full-page plates and 211 text illustrations. Philadelphia and London: J. B. Lippincott Co. 1900.

Bacteriology in Medicine and Surgery, a Practical Manual for Physicians, Health Officers and Students. By Wm. Hallock Park, M.D., Associate Professor of Bacteriology and Hygiene, University and Bellevue Hospital Medical College, etc., assisted by A. R. Guerard, M.D., Assistant Bacteriologist, Department of Health, City of New York. New York and Philadelphia: Lea Brothers & Co. 1899.

Practical Anatomy, including a Special Section on the Fundamental Principles of Anatomy. Edited by W. T. Eckley, M.D., Professor of Anatomy in the College of Physicians and Surgeons, University of Illinois, etc., and Mrs. Corinne Buford Eckley, Instructor in Anatomy in the Northwestern University Dental School, etc. With 347 illustrations, many of which are in colors. Philadelphia: P. Blakiston's Son & Co. 1899.

Deaver's Surgical Anatomy: A Treatise on Human Anatomy in its Application to the Practice of Medicine and Surgery. By John B. Deaver, M.D., Surgeon-in-chief to the German Hospital, Philadelphia. In three volumes, illustrated by about 400 plates, nearly all drawn for this work from original dissections. Vol. I. Upper Extremity, Back of Neck, Shoulder, Trunk, Cranium, Scalp, Face. Philadelphia: P. Blakiston's Son & Co. 1899.

Retinoscopy (or Shadow Test) in the Determination of Refraction at One Metre Distance with the Plane Mirror. By James Thorington, M.D., Adjunct Professor of Diseases of the Eye in the Philadelphia Polyclinic and College for Graduates in Medicine; Assistant Surgeon to Wills Eye Hospital, etc. Third edition, revised and enlarged, 43 illustrations, 12 of which are colored. Philadelphia: P. Blakiston's Son & Co. 1899.

Saunders' Question-Compends, No. 4: Essentials of Medical Chemistry, Organic and Inorganic, containing also Questions of Medical Physics, Chemical Philosophy, Analytical Processes, Toxicology, etc., prepared especially for Students of Medicine. By Lawrence Wolff, M.D., Demonstrator of Chemistry, Jefferson Medical College, etc. Fifth edition, thoroughly revised by Smith Ely Jelliffe, M.D., Ph.D. Philadelphia: W. B. Saunders. 1899.

Lea's Series of Pocket Text-Books. Physiology: A Manual for Students and Practitioners. By Howard D. Collins, M.D., Assistant to the Attending Surgeon of the Roosevelt Hospital, etc., and Wm. H. Rockwell, Jr., M.D., Assistant Demonstrator of Anatomy, College of Physicians and Surgeons (Columbia University), New York, etc. Series edited by Bern B. Gallandet, M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1899.

Lectures upon the Principles of Surgery, delivered at the University of Michigan. By Chas. B. Nancrede, A.M., M.D., LL.D., Professor of Surgery and Clinical Surgery, Emeritus Professor of General and Orthopedic Surgery, Philadelphia Polyclinic, etc. With an appendix containing a Résumé of the Principal Views held concerning Inflammation. By Wm. A. Spitzley, A.B., M.D., Senior Assistant in Surgery, University of Michigan. Illustrated. Philadelphia: W. B. Saunders. 1899.

Gout: Its Pathology and Treatment, founded on the Goulstonian Lecture on "The Chemistry and Pathology of Gout," delivered by the author before the Royal College of Physicians of London in 1897; with the addition of some Recent Investigations Concerning the Treatment of Gout and a Detailed Account of the Treatment of the Various Forms of Gout. By Arthur P. Luff, M.D. (Lond.), B.Sc., F.R.C.P., Physician in charge of Out-Patients and Lecturer on Forensic Medicine at St. Mary's Hospital. New York: Wm. Wood & Co. 1899.

A Manual of Organic Materia Medica and Pharmacognosy: An Introduction to the Study of the Vegetable Kingdom and the Vegetable and Animal Drugs. etc. By Lucius E. Sayre, B.S., Ph.M., Dean of the School of Pharmacy, Professor of Materia Medica and Pharmacy in the University of Kansas, etc. Second edition, revised, with Histology and Microtechnique by William C. Stevens, Professor of Botany in the University of Kansas. With 374 illustrations, the majority of which are from original drawings. Philadelphia: P. Blakiston's Son & Co. 1899.

The International Text-Book of Surgery. By American and British authors. Edited by J. Collins Warren, M.D., LL.D., Professor of Surgery in Harvard Medical School; Surgeon to the Massachusetts General Hospital, and A. Pearce Gould, M.S., F.R.C.S., Surgeon to the Middlesex Hospital; Lecturer on Practical Surgery and Teacher of Operative Surgery, Middlesex Hospital Medical School; Member of the Court of Examiners of the Royal College of Surgeons, England. Vol. I. General and Operative Surgery. With 458 illustrations in the text and nine full-page plates in colors. Philadelphia: W. B. Saunders. 1899.

Progressive Medicine: A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College, Philadelphia; Physician to the Jefferson Medical College Hospital; Member of the Association of American Physicians, etc. Volume II, June, 1899. Surgery of the Abdomen, including Hernia; Gynecology; Diseases of the Blood; Diathetic and Metabolic Disorders; Diseases of the Spleen, Thyroid Gland and Lymphatic System; Ophthalmology. Philadelphia and New York: Lea Brothers & Co. 1899.

Original Articles.

THE MASSACHUSETTS STATE HOSPITAL FOR CONSUMPTIVES AT RUTLAND; ITS PURPOSE AND THE WORK ACCOMPLISHED DURING THE FIRST YEAR.[1]

BY VINCENT Y. BOWDITCH, M.D., BOSTON.

In the spring of 1895 the Massachusetts State Legislature, upon the suggestion of physicians and members of the city, appropriated a sum of money for the establishment of a hospital, or sanitarium, for the treatment of consumptives in a suitable location in the State.

The hilly region of central Massachusetts, in the town of Rutland, about twelve miles northwest of Worcester, was wisely selected by the Board of Trustees, and in October, 1898, Governor Wolcott formally declared the institution to be ready to receive patients.

This event marked an epoch in the treatment of tubercular disease in our country, inasmuch as it was the first legislative attempt in the United States to cope with consumption and other diseases of tubercular origin.

The sanitarium treatment of phthisis has become an old story to most of us, but until comparatively recently in this country, institutions have been established by private individuals only, and usually for the well-to-do classes, the exceptions being, so far as I know, Dr. Trudeau's Adirondack Sanitarium, the Sharon Sanitarium and another small one at Aiken, S. C., recently established under Dr. C. F. McGahan's supervision, all intended for people of very limited means. I am speaking of sanitaria for incipient cases, not of hospitals for the hopelessly sick.

In the original prospectus of the Rutland Hospital, or Sanitarium, as it should more properly be termed, the trustees use the following words: "Inasmuch as the primary purpose of the hospital is to arrest the disease, and if possible to extirpate it, only such patients will be admitted as are deemed not too far advanced to admit of reasonable hope of radical improvement. In no sense is the hospital to be considered as a home for the hopelessly sick; for, great as is the recognized need for homes of refuge for advanced consumptives, such service is manifestly incompatible with the even more needed service of rescuing lives that can be saved only by sanitarium treatment."

The results of the first year's work are of special interest, therefore, from the fact that they show what can be done for people of very limited means, even in the harsh climate of New England, which is considered so unfavorable for consumptives.

The hospital stands upon the southern slope of a hill about a mile and a half from the village of Rutland, at an altitude of about 1,200 feet. It is protected on the northwest by a thick forest of pine, hemlock and hard wood, overlooking the rolling country of the centre of our State, Mt. Wachusett being about eight miles to the north. The water supply comes from Muschopauge Lake, near by, and the sewage is disposed of by means of large filter beds on the northern slope of the hill, about a mile distant. The buildings are arranged as pavilion wards, one story in height, spreading like the outstretched fingers of the hand towards the south from a long convex corridor which connects the buildings; the kitchen, heating, electrical and laundry departments being all towards the northern side of the institution. The patients sleep in open wards as a rule, a few small isolated rooms being used chiefly in case of severe illness or for special reasons only. Sun-rooms and piazzas are placed at the ends of the wards, the whole arrangement throughout being such as to obtain the maximum of both sunlight and fresh air. For winter use, small temporary wooden shelters are erected, open only towards the south, where patients take daily and hourly air baths. In the neighboring wood, as picturesque and useful adjuncts to the hospital, are the various camps made by the patients from boughs and other material and here much of the daytime is passed both in summer and winter.

At the outset many cases of advanced pulmonary disease were admitted for whom there was very little hope of anything other than temporary improvement. The large number of applications since that time has justified the more careful selection of cases in order that those with really incipient disease may have the benefit of the treatment. By this decision we believe we accomplish the greatest good to the greatest number.

From October 10, 1898, to October 1, 1899, the number of patients who were admitted to my service was	212
Number re-admitted	2
Total number of admissions	214
Number discharged up to October 1, 1899	126
Number still under treatment October 1, 1899	88
	214
Of the 126 discharged, the number who remained less than two weeks and are therefore not considered in the results is	11
The number who remained more than two weeks is (Of these one was a case of bronchitis only.)	115
	126
Of the remainder (114), the number discharged as "arrested cases" is	35
Number "much improved"	37
Number "improved," including one case of tubercular disease of the bladder, without pulmonary disease	17
Number "not improved," including those who failed and returned to their homes or were sent to other hospitals	24
Number "well," bronchitis only	1
Number died in the hospital[2]	1
	115

SYNOPSIS OF "ARRESTED CASES."

Of these the number having bacilli in their sputa previous to or after entrance	20
The number of cases without sputa on whom the tuberculin test was tried with positive result	2
The number of cases having undoubted symptoms and physical signs of pulmonary disease *without bacilli*. (Tuberculin test not used.)	9
The number of cases having very suspicious symptoms without definite signs in the chest (cough, malaise, slight fever, loss of flesh, etc.). (Tuberculin test not used.)	4
	35

In my nomenclature I have differed from some of my colleagues for the following reason: By the use of the term "arrest of disease," I have adhered to the custom which I have followed at the Sharon Sanitarium for several years, as being on the whole to me the simplest method of describing those cases in which all active symptoms, like cough, expectoration and fever, have disappeared and where the general symptoms would seem to indicate a complete restora-

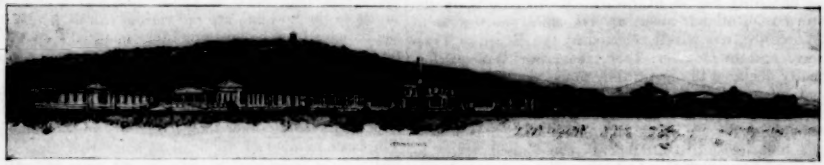
[1] Read before the Clinical Section of the Suffolk District Medical Society, November 15, 1899.

[2] This patient had so much improved that he had decided to leave and keep a hen farm. In the train he received a sharp blow on the chest, which was followed by a severe hemorrhage, from which he never rallied.

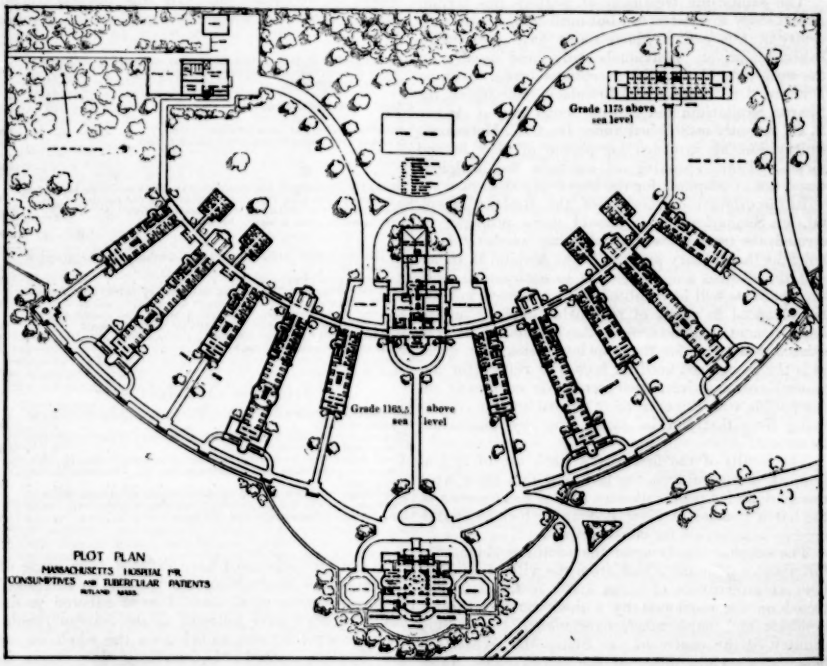
tion to health, even when there may be abnormal sounds in the chest remaining. The treacherous nature of the disease, however, has made me unwilling to use the term "cured" before many months have elapsed after cessation of active symptoms, even in cases where an apparent lack of definite signs would seem to make such a classification justifiable at the time of discharge. The term "much improved" is used in those cases in which marked amelioration of all or most of the prominent symptoms is noted, for example, cough, expectoration, temperature and weight, the degree of improvement of course varying in individual cases from a state of decided improvement to one almost reaching an arrest of disease, but where patients have been obliged for various reasons to leave the hospital contrary to advice. The term "improved" is used in those cases where only a slight degree or possibly rather marked improvement of the symptoms is noted.

CONDITION UPON ENTRANCE OF CASES DISCHARGED AS "ARRESTED."

Incipient cases with slight signs in one or both apices	27
Cases with signs somewhat advanced in one or both lungs	8
	35
Average stay in the hospital of the "arrested" cases (Maximum stay 10 months, minimum stay 6 weeks.)	4½ mos.
Average stay in the hospital of the total number discharged before October 1, 1899, and whose cases are considered in the report (115)	4 mos.
Average stay in the hospital of those "much improved"	4 mos.
Average gain in weight of the 35 arrested cases	15 3-5 lbs.
The largest gain in weight by any one of these arrested cases was	45 lbs.
The length of stay at the hospital of this patient was	6 mos.



PERSPECTIVE



Incidentally it may be mentioned that this case gave a history of cough for over six months previous to entrance, great loss of flesh and strength, with signs of disease in the tops of both lungs (dulness and moist

râles), and that all outward symptoms disappeared at least two months before discharge and she has remained in the same condition ever since.

The percentage of "arrested" cases of pulmonary disease is	30.97+
The percentage of cases "much improved" and "improved," together	46.10+
The percentage "not improved"	21.23+
The percentage of cases discharged "well," one of bronchitis only	.85
The percentage of cases who died in the hospital (one) .	.85

These facts are the result of careful examination of the patient, both as to the physical signs in the chest and the general condition at time of entrance and before discharge. It is a curious and interesting point that the percentage of arrested cases is almost exactly the same as that noted at the Sharon Sanitarium during the past eight years and is in accordance with the experience of others in sanitaria elsewhere. That this has been accomplished even when hampered by the lack of sufficient appropriation this year is additional proof of the efficacy of hygienic treatment alone in this class of cases. With larger means at our command we believe that even better results can be shown in the future.

In offering this paper for your consideration it should be distinctly understood that no claim is made thus far other than that the disease has been *arrested in its progress;* in other words, that cough, expectoration and fever have ceased; and that the general condition is one of apparent health, even though in some cases abnormal sounds have persisted in the chest. The crucial test of the efficacy of any method of treatment lies in its lasting effect. The subsequent histories, therefore, of these patients a few years hence will be of special interest and of even greater value than the present records.

In a paper before the American Climatological Association in New York last May I gave the subsequent histories of 34 arrested cases treated at the Sharon Sanitarium. The percentage of those who had remained apparently well after intervals varying from two to seven years since their discharge was gratifyingly large. The results moreover were instructive, inasmuch as in those cases where symptoms of the disease had returned it was, except in one case who died after an operation, either because of the apparently advanced condition of the disease at time of entrance, or in consequence of the patients' returning to unhygienic surroundings and occupations.

At Sharon and at Rutland constant effort is made to induce patients to seek some other form of livelihood than that in which the trouble arose, experience having taught us the necessity of this advice. Persistent effort in this direction will often accomplish much even in cases whose outlook for a change in their life work is far from encouraging at first.

One serious obstacle to success in some cases is the lack of funds to enable patients to remain a sufficient time under hospital supervision. Several discharged as "much improved" during the year were apparently on the highroad to renewed health and vigor but were obliged to leave Rutland from lack of means. This could and doubtless will be obviated in the future by a more generous appropriation, a part of which can be devoted to the support of such people during the necessary stay at the hospital.

METHODS OF TREATMENT AT RUTLAND.

Whatever good results have been obtained are due chiefly to hygienic measures alone. In following these methods much the same course is pursued as in other modern sanitaria for consumptives. Constant life in the open air, whether resting or exercising, is insisted upon. Except at the hours of rising and going to bed (at which times in winter the heat is turned into the wards), the windows are left open, varying somewhat according to the outside temperature, during the twenty-four hours. Sponge or plunge baths at regular intervals are an essential part of the treatment, while three hearty meals a day, with lunches of milk, eggs or their equivalent, are given. Pulmonary gymnastics are also taught and regularly practised. Little weight has been given to medicinal treatment except as an occasional adjunct to the other and more important kinds. One attempt has been made with a certain form of serum in a limited number of cases, but as the results were quite negative it was discontinued after giving it a fair trial. No record of the results should be given without expressing my sincere appreciation of the cordial co-operation of Dr. Marcley, the superintendent, Miss Thrasher, the matron, and the nurses, without whose aid, often under difficult conditions, little could have been accomplished.

To the indefatigable work of my assistant, Dr. Henry B. Dunham, we owe much of whatever success has been attained, and to his colleague, Dr. David P. Butler, Jr., my sincere thanks are due for his efficient help during the recent unfortunate illness of Dr. Dunham.

In thus showing you what is being done by our State for the treatment of tubercular disease, especially in its pulmonary form, I have endeavored as far as possible to avoid the much dreaded and much quoted "personal equation" in giving results which have been corroborated by others. That the sanitarium treatment of phthisis is *par excellence* the most efficacious method of checking the disease, I am perfectly convinced after a personal experience of eight or nine years. The fancied objections which not many years ago occasionally were, and even now are, offered against it, such as the depressing effect of the patients upon each other, the danger of infection upon segregation of consumptives, etc., are mere shadows of the imagination to those who have had any experience in the matter. The manifold advantages far outweigh any possible objections, and the results are far more gratifying than any attempt at less radical measures.

At the opening of the Rutland Hospital I confess now to having had considerable doubt as to the wisdom of building open wards, lest the lack of privacy would prevent many desirable patients from entering. All fear on this point, however, has long since been dispelled. The philosophy and good cheer shown by most, if not every one, of the patients, under present conditions, has been a most encouraging and inspiring feature of the place. The method of having open wards for a large number of patients has this distinct advantage, moreover, that it allows a much larger circulation of air and freer ventilation than would be possible by an arrangement of small cubicles massed together. The custom of single bedrooms, as in other much smaller institutions, is of course at Rutland impracticable on the ground of expense.

At other times and places I have spoken of the great need of such institutions not only in remote regions but in properly selected sites near our great cities. The fact that in three months after the first patient was received the hospital was filled to its

utmost capacity (about one hundred and seventy beds) corroborates this opinion; that similar institutions for incipient cases are needed in different parts of the State is also shown from the fact that the applications far exceed the capacity of the hospital, many of them being from western Massachusetts, the large majority, however, coming from the eastern portion, especially the vicinity of Boston. To increase the number of institutions moreover, rather than to greatly enlarge the capacity of the present hospital is much to be preferred. The largest sanitaria abroad with a corps of assistants have about 200 patients only. With a larger number we run serious danger of making the institution too bulky, and deterioration in the quality of work accomplished would almost inevitably follow.

Again I wish to emphasize what I believe to be one of the most important features of an institution of this nature; namely, its educational effect upon the community in general. Having positive proof of the beneficial effect of life in the fresh air, day and night, the patients preach this gospel far and wide to their families and friends with good results which I believe to be incalculable. Constant evidence of this is given in numerous letters received from former patients. During their stay they have had it impressed upon them that when they leave the institution they can act as missionaries, as it were, in the crusade against tuberculosis by teaching others the value of fresh air, proper diet, judicious exercise and cleanliness. That the lesson has not been lost upon them is one of the hopeful signs for the future.

To Massachusetts, then, belongs the credit of taking the first step in this direction in the United States. Indiana has lately followed her example, and if one may judge by the enthusiasm displayed at a recent meeting of the New York Academy of Medicine, New York will not be slow in following the example of her sister States. At that meeting a committee was formed to confer with the municipal and State authorities in consequence of a paper by Dr. Alfred Meyer, upon the Rutland Hospital. That many institutions of similar character will in another decade be established throughout the United States is more than probable.

One fact must, however, be recognized and guarded against. In the enthusiasm which marks the beginning of every new movement, we have to meet the inevitable errors of judgment and exaggerations of statement which, if not anticipated, will surely detract finally from the merits of any cause. Where popular interest is excited, as in this case, these dangers are more than doubled. Already we have been obliged to modify, if not deny, the exaggerated and often sensational statements of the lay press in regard to the Rutland Hospital. We, as physicians, are more or less prone to seize upon new ideas, and in the first glow of enthusiasm to paint with too glowing colors opinions which, under soberer judgment, have often to be modified, even when not completely abandoned. Progress seems to be always marked by the middle path between ultra-conservatism and blind enthusiasm.

In urging vigorous State action in the treatment of tuberculosis, we certainly cannot be accused justly of taking either extreme; we are simply building upon the idea which received its first strong impulse from Brehmer, in the mountains of Silesia, forty years ago; an idea which has steadily and surely grown, fostered by the patient and careful work of competent observers in Europe and America. Keeping in mind the fact that every method has its limitations and that as yet there is no known panacea, we can rejoice, nevertheless, in the public recognition of the necessity of using radical measures, as our State is now doing, believing them to be a great step forward, not only in the treatment but the prevention of tuberculosis. That the medical profession of Massachusetts, therefore, may strengthen by their personal influence the work just begun by the State is my earnest desire.

BRADYCARDIA, WITH REPORT OF A CASE.[1]

BY RICHARD F. CHASE, M.D., BOSTON,
Of the Medical Staff, Boston Dispensary; Instructor in Clinical Medicine, Tufts College Medical School.

BELIEVING that cases of persistent slow pulse are sufficiently rare and interesting to warrant reports, the following is submitted:

Mr. A., machinist, age seventy-five. His father and mother died of phthisis; four sisters and a brother died of heart disease; there is one brother now living, eighty years old. He has always used strong tea and coffee in liberal amounts, and for fifty years has consumed a ten-cent piece of tobacco daily, both smoking and chewing; of late this amount has lasted him a week. In alcoholic liquors he has indulged very moderately. There is no venereal history, and he has never received any injury of consequence. At the age of twenty-five he had rheumatic fever in several joints, of about three months' duration. From that time to seven years ago, he does not remember consulting a physician. Seven years ago he had an attack of bad breathing; said the doctor feared pneumonia, but was not confined to his room and fully recovered in a few days. At this time he gave up work and has done none since, although he has been well and active, frequently taking walks of several miles. For the past year he has been obliged to take occasional rests during the walks, on account of difficulty in breathing.

February 2, 1899, he consulted me on account of edema of both legs, scantiness of urine and general weakness, of about two weeks' duration. For past several months he has complained of a numbness of head, vertigo and faintness, but has never fainted; also of being short winded and always feeling cold.

Examination showed a man six feet in height, rather spare in flesh and active, of a calm nervous temperament. There was cyanosis of lips, nails and ears; the veins of hands and arms were very prominent; there was also some puffiness under the eyes and moderate edema of both legs and feet; no ascites. The pupils were contracted, but would react to light and accommodation. Knee-jerk and ankle clonus normal. The lungs and abdominal viscera were negative. There was no atheroma of radial, brachial or temporal arteries. Pulse in right radial while sitting was 30 per minute, strong, full and regular; the left radial the same, but less strong. A few minutes later while standing the pulse was 26 per minute.

Examination of heart. — Pulsation seen in epigastrium while sitting, not on standing. Percussion gave no enlargement; if any change, it seemed undersized. The apex beat was easily felt in the fifth interspace,

[1] Read in part before the Clinical Section of the Suffolk District Medical Society, November 15, 1899.

one inch within the nipple. At the apex the heart's sounds were heard, strong and labored; sometimes irregular, but usually regular; there was a soft, blowing, systolic murmur, transmitted to a little outside of the nipple and upwards for about two inches; not heard in the back. The pulmonic second sound was slightly accentuated. The sounds over other valvular areas were indistinct. The heart's systole and arterial pulsations were synchronous.

The appetite was fairly good, the bowels were regulated by a laxative. Acetate of potassium, 10 grains, three times daily, and tincture nux vomica, eight minims, three times daily, were prescribed. The patient at this time seemed very little inconvenienced by his affection.

February 22d. After ascending a flight of stairs the breathing was accelerated and the pulse was 32; after ten minutes, undergoing examination, pulse was 32; fifteen minutes later it was 30.

February 24th. Sitting, pulse 29. Edema diminished; less cyanosis; was passing more urine.

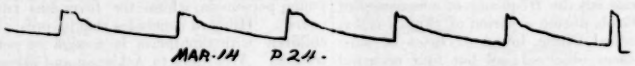
February 28th. Lying, pulse 29; twenty minutes later, 30. Edema still more dimininished; less trouble in breathing and feeling stronger.

March 2d. He was seen by Dr. Harold Williams at Boston Dispensary and shown to students. Immediately after going up two flights of stairs and being somewhat excited, the pulse was 34 and irregular.

March 5th. Edema nearly disappeared; no pitting. Pulse 24. Was seen by Dr. Twombly, who agreed in points of examination. During past several days had taken nux vomica irregularly.

March 10th. On account of the increased slowness of pulse, nux vomica was increased to 12 minims, three times daily, apparently without any effect. Examination of urine at this date was negative. Pulse 28.

March 14th. While taking a sphygmographic tracing, in which he was much interested, there was occasional irregularity of the pulse, which was 24.



March 17th. Pulse 27, standing; temperature 97°, respiration 26, following exercise.

March 19th. Pulse 27, standing; temperature 98°, respiration 21.

March 21st. Pulse 27, sitting; temperature 98°, respiration 20. Prescribed atropia, .01 grain, three times daily.

March 24th. Before going up two flights of stairs hurriedly, pulse 26, respiration 24. After, pulse 28, respiration 29. Some edema present; mouth very dry; pupils dilated. Omit atropia; take potassium acetate, 15 grains, three times daily.

March 30th. Pulse 29.

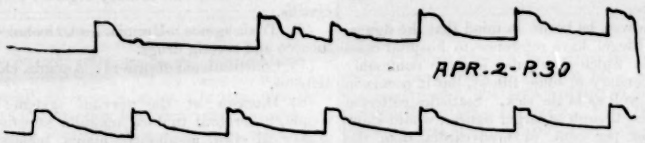
April 2d. Edema slightly diminished; slight pitting over tibiæ. Urine increased; gets up once at night, but has not formerly. On my arrival, pulse was 28, temperature 98.6°, respiration 22. While using the sphygmograph the pulse reached 36, the highest I had ever counted it. There was also an occasional irregularity, as noted on previous occasions, usually when patient was excited; the condition is shown by tracing of this date, the only time I succeeded in catching it with the sphygmograph. The high pulse rate and occasional irregularity I could not account for, as the patient was not excited; there was no apparent cause. This was the last time I saw him.

April 4th. He walked to his daughter's, a distance of three-quarters of a mile. On his arrival did not seem fatigued or out of breath; he sat down and talked a few minutes. Shortly his daughter, not receiving a reply to a question, looked up and saw that he was very pale and motionless — "looked as if he was dead." In a minute consciousness returned. He became purple, spoke a few words and vomited; afterwards he felt all right. Directly after a light dinner he had another attack; recovered in two minutes. He sat up that evening and talked as usual, retired at 8 P. M., slept well and arose next morning refreshed, but a little weak. During the morning of April 5th he had three attacks; could tell when they were coming on. That afternoon he went to bed, had one severe attack and died. A physician who was called said the pulse was as low as 25.

An autopsy could not be obtained.

The features of this case which seem of interest are, (1) the cause of the slow pulse; (2) the duration; (3) the influence of the excessive amounts of tea, coffee and especially tobacco; (4) the relation of the valvular lesion to the slow pulse; (5) the rise of pulse and temperature three days before the patient died.

It will be seen in the following list of cases that this case is assigned to a class in which the cause is rarely determined before death, and not always, by any means, at the autopsy. During his illness seven years ago, he said "the doctor took his pulse and remarked that he had some fever," and he inferred that the rate was high. From correspondence with the physician I found he did not remember the case; had there been a markedly slow pulse, it seems probable that he would have recalled it. The duration of the symptoms has been less than one year, and probably the slow pulse did not much precede them. Tea, coffee and tobacco



have been assigned as causes of bradycardia; that either was the cause in this case would be difficult to prove. Bradycardia, as we all know, is rarely met in valvular lesions, its presence from whatever cause might be expected to interfere with compensation, and in this case it seems not improbable that it may have done so. That the valvular lesion was the cause of the slow pulse there is no way of determining. In any similar case a spasmodically increased pulse rate without apparent cause would to me be an ominous sign.

Another case that recently came under my observation will serve as an example of another very different type of bradycardia, and may warrant a brief report.

Man, forty years old, health generally good. Examined him in May, 1899, with reference to his heart, which was found normal; pulse the same. Was called to him in October, 1899, on account of an attack of indigestion, and found the pulse 43 and 45 per minute. During the hour I was with him it did not exceed 45, and was synchronous with the heart's systole. The next morning the patient was feeling quite well and the pulse was 90; three days later it was 74 per minute. There were no symptoms referable to the slow heart's action; the duration probably did not exceed twenty-four to forty-eight hours. The cause was most probably a reflex one arising from the stomach.

The term "bradycardia" has been given by Grob to those cases of slow pulse which are synchronous with the heart's systole, the rate being less than 60 per minute. The term has, however, been incorrectly applied to cases in which the pulse and heart's systole were not synchronous, the pulse for some reason failing to indicate every ventricular contraction. Moreover, there has been a tendency with some writers to accept only a lower rate, as 50 or under, as constituting a bradycardia. Hence there is confusion not only regarding the rate but the frequency of occurrence of bradycardia. Grob, during a period of three years at the Zurich Medical Clinic, found 82 cases of slow pulse in 3,578 cases observed; all but four occurred in males. Riegel, in seven years' observation at the Giessen Medical Clinic, found 1,041 cases in 7,567 patients; 710 were in males, 331 in females. On the other hand, R. Gossett Brown in 1889 said: "In many thousands of cases both in hospital and in private practice, I have twice seen cases of slow pulse." The most obvious reason for this discrepancy in observations would seem to be a difference in pulse rate referred to, that of Brown's probably being much lower than that given by Grob. Accepting Grob's rate, cases of bradycardia may be considered of fairly common occurrence.

It must, however, be borne in mind that the figures of Grob and Riegel have reference to hospital cases only, a class in which slow pulse is more commonly met, being secondary to some illness, but it occurs in the healthy as well as in the sick. Statistics collected from all sources, though of larger figures, would show a much smaller per cent. of bradycardia than the above. Prentiss, who in 1889 must have made a diligent search for individually reported cases, collected 94. To this number I have been able to add but nine cases reported since 1889, making a total of 103 cases. This collection differs from that of Grob's and Riegel's in embracing a far larger proportion of the unusual types. Of these 103 cases, excluding those due to fatal injury and others in which the age is not given, we have 77 cases, of which the average age is found to be fifty-three years. Adding 84 of these cases in which the sex is recorded to Grob's and Riegel's collections we have a total of 1,207 cases, which is a larger number and offers a greater representation of all classes than any statistics previously presented. Of these 1,207 cases we find over 70 per cent. occurred in males. The fact that bradycardia is more common in males than in females has given occasion to Morison for an article on this feature, in which he concludes: "The belief is justfiable in the meantime until statistics prove the contrary that the constitution of the male more frequently results in bradycardia than do the like conditions in the female, although large statistics show that heart disease is more common in women than in men."

The conditions in which bradycardia occurs are of interest, and are well given by Riegel in his classification, which, by the way, is the one most generally accepted. It is as follows:

(1) Physiological bradycardia.

(2) Pathological bradycardia.

Physiological bradycardia includes those cases due to physiological conditions only. Probably Napoleon's case is the best-known example of this type. The condition is reported to have been observed in entire families. It occurs in the puerperal state at full term, abortions and premature labors; also in fasting and other conditions. In any case of slow pulse an extended observation may be necessary to determine its class.

Pathological bradycardia embraces all cases not physiological. It occurs in the following conditions:

(1) Convalescence from acute fevers, such as pneumonia, typhoid fever, erysipelas, scarlatina, diphtheria, acute rheumatism, and the like. It is most seen in young persons in whom the fever has run a normal course. Hibbard concludes that its presence in young children with diphtheria is a sign of serious heart trouble. According to Atkinson and others, it is met with in the beginning of acute rheumatism as well as in convalescence.

(2) Diseases of the digestive system: Acute, chronic and nervous dyspepsia, ulcer and cancer of stomach, and esophageal affections.

(3) Respiratory diseases: Emphysema, bronchitis, pleuritis and laryngeal affections.

(4) Circulatory disturbances: Myocarditis, fatty degeneration of heart, pericarditis and arteriosclerosis; not common in valvular diseases.

(5) Diseases of the urinary organs: Nephritis and cystitis.

(6) Toxic agents: Uremia, lead, alcohol, tea, coffee, tobacco and certain drugs.

(7) Constitutional disorders: Anemia, chlorosis and diabetes.

(8) Diseases of the nervous system: Epilepsy, apoplexy, cerebral tumors, medulla affections, injury to cervical cord, meningitis, mania, melancholia, and the like.

(9) Various other affections, as skin diseases, affections of the sexual organs, sunstroke, etc.

After giving these divisions and subdivisions, Riegel feels that there are still cases which may not properly

come under this grouping, and mentions as an example those cases in old persons in whom some affection of the heart or blood-vessels, most probably due to old age, is the cause of the slow pulse. Again, of the 94 cases by Prentiss, in 35 no cause is assigned for the slow pulse. This is of particular significance for the reason that every writer has probably done his utmost to ascertain the cause.

For the above reasons, but more particularly from the observation of one of these cases and the study of many reported cases, I am led to believe there is a class of case which thus far has not received its due amount of consideration. In confirmation of this belief I present a series of cases which, both in number and in similarity to one another, seem sufficient to establish a class of their own. In number they constitute about one-third of all the individually reported cases, and undoubtedly many more might be added to this list; were they not of particular interest they probably would not have been reported.

Of 33 cases in which the age is given, the average is found to be over sixty years, and but one case occurred under forty years. Of 34 cases in which the sex is recorded, 30 were in males. In more than half of the cases the duration has been years; in any case it was probably longer than was recorded, as the condition is rarely discovered in the very beginning. The pulse rate recorded was the lowest observed, and although it may not have remained at that point it usually continued low to the end. From the fact that in these cases the slow pulse was persistent, whereas in other cases of a different type it is a temporary condition, Truffet has divided all cases into (1) *Transitory* and (2) *Permanent* bradycardia. This division, like all others, has been more or less criticised. The temperature in the few cases recorded was subnormal, except perhaps near the end.

The bradycardial symptoms referred to consist of attacks of syncope, vertigo, dyspnea and sensitiveness to cold, all of which may be due to disturbances of the circulation, resulting from the slow pulse. These symptoms were present in all but one case. It is of interest to note that in a large number of these cases no accompanying disease has been apparent, and even in those cases attended by some affection it would often seem a question of how much influence it may have had on the bradycardia. From the indiscriminate use of the terms "epileptic," "epileptiform" and "apoplectic" in the reports of these cases, it is difficult at times to determine if a true epilepsy or apoplexy were present. Perhaps attacks of syncope may have been mistaken for true "epileptic fits."

BRIEF REPORTS OF THIRTY-FIVE CASES OF SLOW PULSE, DESIGNATED BY THE AUTHOR AS CASES OF IDIOPATHIC BRADYCARDIA.

No.	Sex.	Age.	Duration.	Bradycardial Symptoms.	Lowest Pulse.	Temperature.	Respiration.	Accompanying Disease.	Termination.	Autopsy.
1	M.	54	Years.	Present.	12+	94.5-98°		None mentioned.	Died in attack.	Thorough but negative.
2	M.	63	"	"	36	96°	20	" "	Living.	
3	F.	75	"	"	34			" "	Living.	
4	M.	54	Days.	"	9			" "	Died.	Four ounces fluid in ventricles of brain.
6	"	46	Years.	"	14			Epilepsy.	Living.	
8	"	70	Weeks.	"	16			None mentioned.	Died in fit.	Ossification of aorta.
11	"	67	Years.	"	22			None mentioned.	Living.	
12	"	70		"	38			Symptoms of brain.	Living.	
18	"	49	Years.	"	49			None mentioned.	Died in fit.	Fatty degeneration of heart.
19	"	70	Years.	"	26			" "	Living.	
20	"	69		"	17			" "	Living.	
38	"	45	Years.	"	28			" "	Died in fit.	Hydropericardium. Heart muscle softened.
44	"	58	Weeks.	"	22			" "	Living.	
48	"	53	Years.	"	24			Valvular.	Sudden death.	
49	"	57	Years.	"	18			None.	Died in fit.	
58	"	62	Months.	"	33	95.6-98.8°		None.	Living.	
70			Months.	"	23			Epilepsy. Syncope?	"	
63	M.	96		"	36			Slight bronchitis.	"	
68	F.	69	Years.	"	30			None mentioned.	"	
69	M.	71	Years.	"	28			" "	"	
82	"	82		"	22			" "	Died suddenly.	
83	"	79	Months.	"	4			" "	Died with fits.	
85	"	70	Years.	"	25			" "	Died in fit.	
92	"	38	"	"	19	97.4-98°		" "	Living.	
16	"	62	"	"	30			" "	Living.	
23	"			"	26			" "	Died.	Heart dilated.
52	F.	78		"	18			" "	Living.	
55	M.	68			21			" "	"	
61	"	61	Months	Present.	36	96°		" "	"	
Mayer.	"	65	Months.	"	18			" "	Died in attack.	Fatty degeneration of heart.
Claybaugh.	F.	55		"	36			La grippe.	Died as result.	Ossification of coronaries and aorta.
Mengy.	M.	75		"	27		27-30	Epilepsy?	Died.	
Hanot.	"	55	Weeks.	"	28			None mentioned.	"	Atheroma and hydronephrosis.
Hanot.	"	72	Months.	"	36			Bronchitis.	"	General atheroma.
Author's.	"	75	Weeks.	"	24	97°	20	Valvular.	Died with attacks.	

Numbered cases are taken from Prentiss's collection.

In the cases where a fatal termination has been reported, many times it seems to have been caused by the bradycardia, the person dying in, or directly following, the attacks of syncope. Fatty degeneration of the heart and atheroma were most frequently found in the ten autopsies; in some, however, there were no pathological conditions which might be assigned as the cause of the slow pulse. This is the type of case we see reported under the headings, "A remarkable case of slow pulse," "An unusual case of persistent slow

pulse," and the like. Unlike the cases due to acute fevers, digestive disturbances, etc., this type is rare; from the usual fatal termination it becomes of especial interest and warrants consideration. Should it not then be assigned to a class of its own? Two classifications have already been referred to, Riegel's and Truffet's.

Riegel's classification is based on the physiological and pathological conditions supposed to exist, for certainly our knowledge of the physiology and pathology of bradycardia at the present time warrants but little more than a supposition in any case. Besides, under one heading he groups those temporary cases usually terminating favorably, together with the persistent cases generally ending fatally. Surely a distinction should be made between these two classes.

Truffet, as I have said, bases his classification on the duration, and places under one division those persistent cases generally believed to be due to physiological conditions, and not affecting the health, together with the persistent cases ending fatally. Here again a distinction should be made, if possible.

Flint has divided all cases into "functional" and "organic." But this division, like Riegel's, calls for a knowledge of the pathological conditions, which we lack.

Without entering further into a discussion of this feature, let us understand (and it is hoped it has been made clear) that there are three types of bradycardia, which differ from one another either in cause, duration, symptoms, or termination. Then let us assign each type to a class of its own. Such a division, one consisting of three classes, has been made by Grob, and he has used the terms "physiologic," "idiopathic" and "symptomatic," which are perhaps as significant as any, and to avoid the introduction of new terms it seems best to use these, but with a somewhat different assignment of cases. Thus we have (1) *Physiological* bradycardia, (2) *Idiopathic* bradycardia, (3) *Symptomatic* bradycardia.

Physiological bradycardia includes those cases due to physiological conditions only. This class is fairly well agreed to by all writers on the subject.

Idiopathic bradycardia may embrace those cases of persistent slow pulse usually occurring in advanced life and more commonly in the male sex, accompanied by the usual bradycardial symptoms, but rarely attended by any discoverable disease which is the cause; the termination is usually fatal, though cases have been known to last for years without seriously affecting the health.

Symptomatic bradycardia should include all cases embraced by Riegel's pathological division, excepting the above classes. To this class belong those cases in which the pulse is symptomatic of some usually apparent condition, ordinarily of temporary duration, but it may include cases terminating fatally from injury, sunstroke, poisoning and certain other serious conditions. As has been said, all classifications are subject to criticisms, but it is hoped the one now offered may in a degree serve its intended purpose.

Cause. — The immediate cause of bradycardia may be due to (*a*) a condition of the nerve centres producing either irritation of the pneumogastric or paralysis of the sympathetic (accelerator) nerves of the heart; (*b*) a condition of the pneumogastric increasing its irritability; (*c*) a condition of the sympathetic nerves paralyzing them; (*d*) or to some condition of the cardiac ganglia in which the influence of the pneumogastric preponderates; (*e*) or a condition of the heart muscle whereby it fails to respond to the normal stimulus; (*f*) or to poisons acting either on the nerve centres or endings.

Pathology. — Our knowledge of the physiology of bradycardia is limited, and the same is true of the pathology; at the same time, regarding the pathological causes of bradycardia we are not lacking in theories. The following 31 autopsy reports give some idea of the pathological conditions thus far observed.

Disease of Brain. — Hydrocephalus, Cases IV, XXIV and XLV; softening, Case XXXIX; adhesions, Case XXV; abscess of medulla, Case XXVIII. Total, six cases.
Disease or Injury of Cord. — Fracture of cervical portion, Cases XXIX, XXX, XXXI, XXXII, XXXIII, XXXIV, XXXVII; induration, Case XXXV. Total, eight cases.
Disease of Heart. — Fatty degeneration, Mayer's, Cases XXXVIII, XVIII; ossification of aortic valves, Case X; hypertrophy, Case XXII; dilated, Case XIII; heart flabby and mitral lesion, Case I.; mitral lesion, Case LXXVIII; aneurism of ventricular septum, Case XLVII; gumma of ventricular wall, Coggeshall's. Total, ten cases.
Disease of Circulatory System. — Ossification of coronaries, Claybaugh's, Case XXI; arteriosclerosis, Hanot's, two cases; ossification of aorta, Case VIII. Total, five cases.
Negative. — Cases I, LXXXVI. Total, two cases.
Numbered cases are taken from Prentiss's collection.

Prognosis. — From what has already been said it is believed the prognosis of the various types of bradycardia is fairly evident.

Treatment. — As to treatment it is also evident that many cases require none, the removal of the cause effecting a cure. In those cases where the patient suffers from the result of a slow pulse, and in which life may be threatened, rest and certain drugs seem indicated. Strychnia, atropia and nitroglycerin are most commonly used, but in the majority of cases without any beneficial effect.

A complete review of this subject has not been attempted. If the reader's attention has been directed to the following points the object of this paper is attained.

(1) A pulse rate under 60, which is synchronous with the heart's systole, constitutes a bradycardia, accordto Grob.

(2) The condition, all classes considered, is of common occurrence.

(3) It is much more common in males than in females.

(4) There are three types of bradycardia, as classified according to their clinical aspects.

(5) The class here termed idiopathic bradycardia, on account of its usual fatal termination, must not in any case be passed by as a mere curiosity.

BIBLIOGRAPHY.

Atkinson. Transactions Association American Physicians, 1891, vi, 292.
Anders. Practice of Medicine, 1897.
Baldwin. Pacific Medical Journal, San Francisco, 1893, xxxvi, 614.
Coggeshall. Boston Medical and Surgical Journal, 1896, cxxxv, 560.
Claybaugh. New York Medical Journal, 1895, lxii, 536.
Flint. American Practitioner, 1876, xiii.
Grob. Deutsch. Archiv klin. Med., 1888, xlii.
Hibbard. Medical and Surgical Reports, Boston City Hospital, 1898-99.
Hanot et Luzet. Soc. des Hôpitaux, Paris, 1894, 433.
Leflaire. Bull. Méd., Paris, 1892, vi, 1,195.
Moore. London Lancet, 1897, ii, 1,438.
Morison. Loc. cit., November, 1895, 1,281.
Mayer. New York Medical Record, 1889, xxxvi, 658.
Ormerod. London Lancet, February 25, 1899.
Ogle. Loc. cit., January, 1897, 296.
Osler. Loc. cit., 1897, i, 623.
Prentiss. Transactions Association American Physicians, 1889, iv, 120; 1891, vi, 258.

Riegel. Zeitschrift für klin. Med., 1890, 240.
Risden. London Lancet, 1897, i, 878.
Truffet. Thèse de Lyon, 1881.
Yeo, J. B. London Lancet, 1872, xxii, 913.

A BRIEF NOTE ON SOME OF THOSE GRAVE ABDOMINAL LESIONS WHICH OFTEN DEFY DIAGNOSIS.

BY THOMAS H. MANLEY, M.D., NEW YORK,
Visiting Surgeon to Harlem Hospital; Professor of Surgery, New York School of Clinical Medicine.

IT is a fundamental principle in our profession and in the science of the healing art, that the first step in the management of a case is to study, interpret, and elucidate symptoms and signs; in other words, make a diagnosis. And, generally speaking, the art of diagnosis has of late years spread far in advance of the power to arrest or cure disease.

Abdominal lesions, traumatic or pathologic. — The above holds good in the lesions of any organ in the body; however, there yet remain very many pathologic conditions within the abdominal cavity wherein definite diagnosis is not possible, except through the breach made by the surgeon's scalpel, the exploratory incision, and exploratory manipulation, something which under many circumstances greatly adds to the gravity of many cases.

Hemorrhage, perforation, obstruction, or enteric paresis. — Very often, after a grave abdominal contusion, who can say with certainty which one of the above conditions prevails? The patient is in shock, with a distended belly; in pain; is vomiting, and depressed in spirits. He is anxious to live and ready to take the chances of an operation. But let it not be forgotten that injudicious operations kill. Our responsibility here is terrible when we properly view the case, and assume for the moment that the patient is a member of our own family.

Without operation. — But we endeavor to quiet our conscience by affirming that the patient "must die in any event." This is a vicious conclusion, as we all know that the abdominal viscera possess remarkable power of safely adjusting themselves to many pathologic conditions. Intra-abdominal hemorrhage is rarely mortal *per se*. Stimson, some years ago, showed by statistics that of the penetrating gunshot wounds of the abdomen, the mortality was larger after laparotomy than those cases treated on conservative lines. Reclus, of Paris, has demonstrated the same condition of affairs. The latest surgical reports from the campaign in South Africa by Sir William MacCormac[1] point strongly in the same direction.

The late Hispano-American imbroglio again showed that there was no place for "abdominal surgery on the battlefield," as the few who had the abdomen opened for bullet wounds succumbed, while all those who were left alone did well.

If in doubt, don't interfere. — Unless our patient is in fairly good form, or unless the symptoms point unequivocally to the seat of a lesion which *we know* to be definite, leave the patient alone, or rather follow closely on conservative lines. Unhappily, in our days, there is altogether too much surgery of the abdomen done simply for the purpose of "operating."

When death follows an acute abdominal lesion, before reacting inflammation sets in, it is invariably attributed to *hemorrhage* or *shock*. The rupture of a hollow viscus is always followed by great shock. To operate on one in this state deprives him of his only hope of recovery. Rather wait till reaction sets in, though we have then to deal with peritonitis. But let us not open our eyes in amazement at the mention of "peritonitis," for this follows every so-called "aseptic" operation performed in the peritoneal cavity, even when very good recoveries are secured. The French use the refined term "*peritonisme*" for this post-operative condition.

Perforation or mechanical obstruction. — Will not some of those of a fervid imagination and who have an explanation for everything be kind enough to point out the fundamental distinction between the symptoms of perforation and those of obstruction? Absence of hepatic dulness is a fairly certain guide in some instances, but it may be wanting. In both the onset is sudden; the patient is seized with furious colic, just such as is noticed in acute hepatic, renal, or appendicular stenosis. Manipulation of the abdomen, with the history of the case, will not always assist us in ferreting out the seat of trouble.

But, with some grave cases, there is no antecedent history of any moment; the abdomen may be clothed by a six-inch layer of abdominal fat, or it may be as hard as a plank from muscular spasm.

Traumatic and pathologic conditions. — In traumatic conditions leading us to suspect grave intra-abdominal lesion, the time to operate, if to operate at all, is indeed a serious problem; but in pathologic states, with but few exceptions, indubitable signs or symptoms of perforation or obstruction call for prompt surgical interference as the only means of saving life.

Crushes of the abdomen with grave symptoms. — When laparotomy is performed after violent compressive or concussive force has been sustained the mortality is very great.

To do a laparotomy for a moderate intraperitoneal hemorrhage is an inexcusable blunder, as it places life in needless jeopardy for a condition comparatively harmless in itself. When the extent of visceral disorganization is large, with few exceptions, the only effect of a laparotomy is to shorten life. In violent abdominal contusions after evisceration, we are frequently unable to immediately determine just what extent of gangrene may later follow.

In this class we should hesitate, deliberate, and weigh our cases well before we commit them to the last extremity of major surgery. I can recall about a dozen such cases in my own practice. Not a single one survived that was laparotomized. As the full course of anesthesia was approached their eyes closed, never to open again, for but few of them ever rallied from the shock. Three of such cases have come under my care within a year.

CASE I. A vigorous young man riding a "wheel" collided with a heavy watering-cart, was thrown down, both wheels passing over his body, just above the umbilicus. Brought to the hospital in desperate shock. Six hours later, rallied somewhat. Belly ballooned, hypersensitive, lower extremities drawn up, vomiting, but no blood, hands cold, pulse thready, bedewed in a cold perspiration, suffered agonizing pain till morphine was freely given. Hepatic dulness absent, abdomen tympanitic to percussion, rather of the character of *false* meteorism than true or *enteric*.

Operation. — Everything in readiness for complications or accident, etherization was begun and continued

[1] Lancet, January 20th.

with caution. A central incision through the median *raphe* above the navel was made, the peritoneum punctured, when there issued through, first a gush of gas, then fluid blood and clots, with semi-digested food and fecal matter. There had not been very much blood lost. The transverse colon was torn off from the gastrocolic omentum, the bowel laid open on its anterior border. Drawing the stomach out through the incision, a rent completely through its posterior wall near the cardia was found. Liver was not injured; blood oozed up behind the hepatic flexure of the colon. Exploring deeply, came on a rent in the capsule of the right kidney; this was sutured and bleeding arrested. Wound in colon closed easily and quickly, the one in the posterior wall of stomach reached and sutured with great difficulty. The small intestine was then completely turned out, when it and all the viscera were scrutinized. Peritoneal cavity was well washed and dried. Abdominal incision closed. Returned to bed in great collapse. Reacted well. At midnight had report that his condition was excellent. Called at 6 A. M. at hospital myself, to find that he suddenly sank at 3 A. M.

Autopsy at 5 P. M. same day. Rents sutured had closed completely, there had been no consecutive hemorrhage. Such had been the melancholy end of a case wherein recovery had been hoped for.

CASE II. Patient, a young man twenty-seven years old, was working a large circular saw, when he was struck sideways by a large splinter of plank. His left forearm, which was flexed at the time he was struck, was fractured through both bones. Timber glanced and hit him in the hypogastrium, knocking him down. Saw him three hours after the accident. In deep shock and great agony. Was prepared for laparotomy. On opening the abdomen there issued forth an enormous gush of bright red blood. There was found a deep laceration in the left lobe of liver with evident rupture of the celiac axis. Notwithstanding large intravenous injections of saline were given mortal symptoms so rapidly culminated that we had to discontinue intra-abdominal manipulations and close the incision, but before it was completed the patient was dead. An autopsy was not permitted.

This was a case in which there was no evidence of perforation of any of the hollow organs, one in which it seemed to me that full stimulation and free opiates might have afforded the patient a chance.

My experience has been that the value of intravenous injections has been much overestimated. They certainly, alone, are not to be trusted in acute traumatic anemia. I am inclined to believe that by rapidly diluting the blood, impairing its hemostatic properties, and by distending the arterial system, this excess of aqueous material very much interfere with nature's provision against death from hemorrhage.

CASE III. A boy of twelve years fell from a cherry tree, striking his abdomen on the rail of a fence. Was brought into the hospital in great distress. Had free vomiting, tympanitic abdomen, absence of hepatic dulness. Nine hours after entrance, *sectio abdominalis*. Large escape of gas and blood intermixed with chylous elements. A rent in the anterior wall of the stomach and through the jejunum in upper fifth were found. There was free bleeding from the mesenteric vessels, which were ligated and rents quickly closed, but before peritoneal toilet was completed, patient succumbed. Autopsy denied.

Might this last case not have survived by symptomatic treatment alone? With the rents in the alimentary canal and chylous leakage, it might seem preposterous to make such an inquiry, but facts are hard things to get over. The peritoneum, we know, possesses remarkable digestive and absorbent properties. An intestine heals with astonishing rapidity, and the jejunum being generally empty there is little chylous material to escape.

My sad experience with these three cases, coming rapidly after each other in one year, chilled my enthusiasm for early operation in this class. Unless we are assured beyond all doubt that a large rent or rupture of a hollow organ is involved, immediate section for violent contusions of the abdomen should be discouraged, and under any circumstances before reaction is established it is a desperate resource of very questionable expediency.

Clinical Department.

A CASE OF MULTIPLE CEREBRAL HEMORRHAGES FROM CHRONIC LEAD POISONING, WITH NECROPSY.[1]

BY J. W. COURTNEY, M.D., BOSTON,
Assistant in Nervous Department, Boston City Hospital; Visiting Physician to the Home for Incurables, Dorchester.

THE reason for the vague title first given to this communication lies in the fact that when Dr. Ogden spoke to me about it, a week or more ago, the brain which I have to show had not yet been sectioned.

The clinical history of the case is as follows: The patient, a married man of forty-one and a painter by occupation, presented himself for treatment at the Nervous Out-Patient Department of the City Hospital on the 18th of September last, complaining of constant headache, dizziness, muscular tremor, and, at times, nausea. The headache was vertical and occipital, and extended down the back of the neck, especially on the right. There was some complaint of deafness for the past year. The patient was said to be excitable and irritable and to be suffering from some impairment of memory. His family history was negative from a nervous and mental standpoint. As to his personal history, he said that he had always been well except for two attacks of colic, the first of which occurred six years ago and lasted for about five weeks; the second was in June, 1899, and was slight in character, but accompanied by dizziness, nausea and vomiting. Consciousness was lost on one occasion during this attack, and altogether the patient was confined to his bed for about ten days. From this time he claimed to have never fully recovered, and he had done no work for over a year on account of general weakness. Venereal disease was strongly denied, as well as excess in alcohol and tobacco.

The physical examination made September 18th reads: "Slight tenderness of right occipital region and superior curved line, down the neck and right posterior lateral region. No tenderness over mastoid. Station good. Pupils react to light and accommodation; external ocular muscles normal. Tongue protruded slightly to right; blue line on gums. Heart

[1] Read before the Clinical Section of the Suffolk District Medical Society, November 15, 1899.

negative, except that second sound is accentuated over whole cardiac area. There is a moderate tremor of hands, which is increased during excitement. Knee-jerks good; no clonus. No tenderness about legs."

The urine showed specific gravity 1.012; albumin one-tenth per cent.; no sugar.

A diagnosis of lead poisoning was made, the patient given KI, 10 grains, three times daily, and referred to the Ear Department for examination.

A note by Dr. J. J. Thomas a week later reads: "Temperature 99°; headache pretty constant; no epistaxis; bowels regular."

Dr. E. M. Holmes, of the Ear Department, reported: "The cerumen in this man's ears could cause his vertigo and tinnitus. There is a chronic dry middle-ear inflammation and some tension on membrane. This can be relieved."

A further note by Dr. Thomas, under same date as above, says: "Abdomen negative, no rose spots; spleen not palpable."

The iodide was continued and sodium phosphate in 10-grain doses was given to aid elimination from the bowels. A specimen of urine was sent to Dr. Ogden for lead examination.

I first saw the patient on October 2d. His main complaint then was of excruciating pain in the head, with occasional nausea and vomiting. The pain was located by him chiefly in the left side of the head and the vertex, and somewhat in the left frontal region. He had also noticed that his vision was failing. There was marked pallor of the face and mucous membranes, but except for the tremor, which was flexor-extensor in the hands and involved also the face, physical exploration was negative.

On account of the exceptionally intense character of the headache, associated as it was with nausea and more or less vomiting, I was impelled to believe that lead was not the only factor present in the case, and entertained the possibility of cerebral neoplasm. With this idea in mind I referred the man to the oculist, for examination of his eye grounds, and on October 11th received the following report: "This patient is hypermetropic and is wearing suitable glasses. The media and fundi are clear, but the right optic disc is moderately hazy, the left much less so. While the condition may be normal for him, I think it would be well to see if it changes any."

October 23d, Dr. Ogden reports: "Trace of lead in 500 cubic centimetres of urine."

The patient says that he has been in bed for a week past on account of the pain in his head. This pain has been so intense as to make him shriek and groan, and for three nights in succession gave him no sleep at all. While talking to me he complained of pain in the vertex, as if some one were pulling his hair out by the roots, and said that slight shaking of the head or movement of the jaws was sufficient to start the pain. He had had no diplopia.

A second examination of the eyes was made on this day by Dr. G. H. Thomas, and the following noted: "The outline of the right disc is slightly more hazy and that of the left decidedly more hazy than at last examination. To my mind there is a distinct swelling of both discs."

In my subsequent handling of the case I was led by the following considerations: Here was a man who had not been exposed to lead for about a year; who had had no colic for many months; and who presented none of the peripheral nerve lesions common to lead poisoning. Furthermore, examination of his urine for lead had shown only a slight trace in 500 cubic centimetres. For these reasons, and from the fact of the great rarity of cephalic manifestations of lead in this community, I was inclined to view lead merely as a contributing element, and favored the idea of cerebral neoplasm. This idea was strengthened, as I have hinted, by the persistent and constantly increasing headache, by the nausea and the beginning papillitis in both eyes. The tremor I considered might be consistent with either lead or tumor. As to the nature and seat of the new growth, I naturally did not attempt to form a positive idea from the data at hand, but with the intention of excluding gumma, I applied the therapeutic test of mercury. This soon produced a stomatitis and was stopped.

On the 30th of October, twenty-eight days after I saw the patient for the first time, and about a month and a half after his first advent to the hospital, he reported that his headache was still constant but not so severe. He went home, passed a fairly good night and in the morning his wife went off as usual to her work, leaving him comfortably fixed in bed. At noon one of the neighbors came in to get him something to eat and found him dead.

Through the family physician, Dr. R. J. McCormack, of Roxbury, I was enabled to obtain a necropsy, and this was kindly done for me by Dr. Joseph Pratt, of the Pathological Department of the City Hospital, some four or five hours after death. The head only was opened. The calvarium was normal, but the dura was much injected and seemed to adhere over the left frontal region. There was much serous dripping from the brain and the convolutions generally showed abnormal flattening. Palpation of the brain was practised but yielded no results, so it was decided to harden it *in toto* in formalin without further examination.

Two days ago, Dr. Pratt made anteroposterior vertical sections of the brain for me, with the results I am about to show. As we proceed from front to back in this series of sections we find, first, in the right hemisphere, what is evidently a recent small hemorrhage occupying the gray matter of the upper portion of the ascending parietal gyrus, and another, and smaller, in the first temporal gyrus. From this point until we reach the left crus cerebri nothing abnormal presents itself, but here you can see the beginning (or rather ending) of a hemorrhage which may be traced backward along its long axis longitudinally into the centre of the ventral part of the pons. This hemorrhage measures one and seven-tenths centimetres in length and is four-tenths centimetres in its average width. Near the periphery of the pons, also on the left side, you notice a second, though very minute, hemorrhage. The tissues surrounding both hemorrhages are blood-stained.

From the general convolutional flattening which was noticeable when the brain was in a fresh state, and from the findings just pointed out, we are naturally constrained to look upon lead as the sole causative factor in the case; its modus operandi having been to produce blood dyscrasia and renal irritation — the latter as evidenced by the albuminuria — and then the arterial breakdown which caused the fatal issue. Optic neuritis, as you all know, sometimes occurs during the course of chronic lead intoxication. As to the

headaches, I can only say that they were the severest I ever encountered unassociated with cerebral neoplasm. The absence, clinically, of those psychical manifestations which are grouped under the title of "encephalopathia saturnina" is interesting in view of the diffuse arterial disease which the widely-separated hemorrhages would lead us to suppose was present in the case.

In conclusion, I must say that the case, taken as a whole, seems to me a rather unusual and instructive one.

Medical Progress.

RECENT PROGRESS IN OBSTETRICS.

BY FRANK A. HIGGINS, M D., BOSTON.

MATERNAL IMPRESSIONS.

LEWIS,[1] in a review of the subject of maternal impressions, says that if maternal impressions explain human anomalies, they should also explain such occurrences among the lower animals and even among plants. Monstrosities are perhaps more common among domestic animals and fowls than among men. The strongest blow is dealt to the theory of maternal impressions by the results of experiments in the production of monsters artificially. Innumerable experiments have been performed upon the eggs of bird, fish, insect and echinoderm which have resulted in the production of almost all the typical varieties of monsters, especially of single monsters. Different varieties can even be produced at the will of the experimenters by different ways of managing the eggs. Monstrosities can be artificially produced in the embryos of birds exactly like those which, occurring in human fetuses, are ascribed to mental shock or nervous impression of the mother. It has often been observed that fish eggs hatched in running water produce a far greater number of double embryos than do those hatched in still pools. The shaking caused by railroad or wagon journeys to the hatchery also results in a greater profusion of double monsters. In human fetuses, even at full term, there are sometimes found remains of amniotic bands and adhesions which, obviously, by interfering with development of different parts at an early period of gestation, were the causes of various malformations. In short, all malformations and monstrosities can be explained by purely physical and mechanical causes, entirely remote from psychic influence, so that there is never any reason to invoke the mysterious or the supernatural to explain natural phenomena.

ANTISTREPTOCOCCIC SERUM IN PUERPERAL INFECTION.[2]

In 1898 the American Gynecological Society appointed a committee to report on the value of antistreptococcic serum in the treatment of puerperal infection. The committee reported at the 1899 meeting and their conclusions are quoted, and are interesting in that they help to strengthen what already was generally believed to be good judgment:

(1) A study of the literature shows that 352 cases of puerperal infection have been treated by many observers, with a mortality of 20.74 per cent.; where streptococci were positively demonstrated, the mortality was 33 per cent.

(2) Marmorek's claim that his antistreptococcic serum will cure streptococcic puerperal infection does not appear to be substantiated by the results thus far reported.

(3) Experimental work has cast grave doubts upon the efficiency of antistreptococcic serum in clinical work, by showing that a serum which is obtained from a given streptococcus may protect an animal from that organism, but may be absolutely inefficient against another streptococcus, and that the number of serums which may be prepared is limited only by the number of varieties of streptococci which may exist.

(4) Thus far the only definite result of Marmorek's work is the development of a method by which we can increase the virulence of certain streptococci to an almost inconceivable extent, so that one hundred-billionth of a cubic centimetre of a culture will kill a rabbit.

(5) The personal experience of your committee has shown that the mortality of streptococcus endometritis, if not interfered with, is something less than five per cent. and that such cases tend to recover if nature's work is not undone by too energetic local treatment.

(6) We unhesitatingly condemn curettage and total hysterectomy in streptococcus infections after full-term delivery, and attribute a large part of the excessive mortality in the literature to the former operation.

(7) In puerperal infections a portion of the uterine lochia should be removed by Döderlein's tube for bacteriological examination and an intra-uterine douche of four to five litres of sterile salt solution given just afterwards. If the infection be due to streptococci, the uterus should not be touched again, and the patient be given very large doses of strychnia and alcohol if necessary. If the infection be due to other organisms, repeated douchings and even currettage may be advisable.

(8) The experience of one of the members of the committee with antistreptococcus serum has shown that it has no deleterious effect upon the patient, and, therefore, may be tried if desired. But we find nothing in the clinical or experimental literature or in our own experience to indicate that its employment will materially improve the general results in the treatment of streptococcus puerperal infection.

FAT AND FECUNDITY.

Reed[3] says that the question, a natural one, as to which is the cause and which the effect in a given case of sterility, coexisting with obesity, is best answered by the history of the case, and the antecedent condition may generally be assumed to be the causal one. Thus in the case of a comparatively young woman who takes on fat and whose increase of weight is followed by a corresponding decline of sexuality, there is logical inference that the first condition is the cause of the latter. This assumption is confirmed when a reduction of the obesity is followed by a spontaneous return of the menstrual and reproductive functions. The physiological conditions underlying the normal deposit of fat are those of abundant supply of nutritive material, normal digestive functions, a free circulatory activity, an absence of excessive muscular exercise, a normal metabolism and the unobstructed elimination

[1] American Journal of Obstetrics, July, 1899.
[2] Loc. cit., September, 1899.
[3] American Medical Quarterly, June 1899.

of metabolic products. When, therefore, in a mature person, in whom the nutritive functions have attained a relative equilibrium, and in whom there occurs a change of type due to the sudden accession of fat, there occurs a re-establishment of the functions of growth, a disturbance in the balance between waste and supply, the latter preponderant. With this recurrence of growth there is also a readjustment of function approximating the prepuberty standard. There is progressive amenorrhea, genital anesthesia and loss of sexual desire, increasing to the clinical picture of a well-established case of sterility. The prognosis depends much upon the intelligent and persistent co-operation of the patient. The acquired obesity of this class may be cured practically always, while restoration of the genital function is less amenable to treatment. Plethoric cases are more easily cured than anemic, while the most tractable of all are those complicated with neurasthenia. The treatment of sterility due to obesity is both constitutional and local, varying according as the case may be anemic or plethoric, simple or complicated, and must embrace a consideration of diet, exercise, bathing, medication and general personal hygiene, while the local treatment must embrace all resources that are calculated to overcome manifest pathologic states and to re-establish the functional power of the genital organs. There is no special diet which should be employed in every case without more or less radical change, and any attempt to apply any one of the numerous so-called systems in a routine way is fraught with hazard.

THE CAUSES WHICH RENDER DIFFICULT THE LABOR OF CIVILIZED WOMEN.

Reid,[4] in a paper read before the British Medical Association, remarks that it is a well-founded belief that the obstetrical forceps is used much more frequently by men of the present generation than the past, and that the change was due, in part at least, to necessity, owing to the fact that there was a gradually increasing disproportion between the fetal head and the maternal pelvis. His belief was that the labors of civilized women were so severe that in the absence of skilled aid a very considerable proportion would perish, and even in cases where surgical aid was unnecessary delivery approached in severity a major operation, the effect of which a woman felt for a fortnight or a month. The labors of savage women were known to be safe and easy, and the question arose, how did civilization render labor difficult? Dr. Reid's view was that women with small pelves tended to have daughters with a like peculiarity, and people who at birth had large or small heads tended to transmit that peculiarity. When a savage woman had a small pelvis or a large-headed child, she generally died in labor. The race was thus purged, generation after generation, of all narrow hips and large heads, while the right proportion between head and pelvis was secured. In the highest civilization many small-hipped women and large-headed children were annually preserved. If these perished, the average difficulty of labor in the next generation would be artificially ameliorated. Here was the reason why the labors of civilized women were becoming increasingly difficult, and he thought that it was not improbable that about the end of the twentieth century forceps operations would be performed much more frequently than at present.

[4] British Medical Journal, August 26, 1899, p. 502.

SYMPHYSEOTOMY, FOLLOWED BY EASY FORCEPS TWO YEARS LATER.

Balfour [5] reports a case in which the patient at her first labor was delivered by craniotomy, at the second by symphyseotomy, after failure of forceps, and at the third labor, delivery was easily accomplished by forceps. The case is reported as of interest, because showing a permanent improvement in the size of the pelvis after the operation of symphyseotomy. The reporter comments on the case of the operation for symphyseotomy by the subcutaneous method, only a knife and a catheter being used, making it eminently suitable for small, dark and dirty houses where no skilled assistance can be had.

IS A SLOUGHING PROCESS AT THE CHILD'S NAVEL CONSISTENT WITH ASEPIS IN CHILDBED?

Dickinson,[6] under the above title, makes an elaborate review of the subject of umbilical cord ligation and sloughing and a plea for the application, in amputating the cord, of the surgical principles that govern other amputations. He says it is not a little curious that the earliest operation in the world, and the only one done on every individual, should be treated by measures that antedate our annals, namely, ligation and absorbent dressings. He lays down the following principles as being directly opposed to the prevailing practice:

(1) Mass ligature should be avoided. Hemorrhage follows the present method occasionally because shrinkage of the gelatine loosens the seizure. Ligatures belong on bared vessels.

(2) A hernial opening should not be closed by a granulation scar. Primary union is readily substituted.

(3) As in the funis the line of demarcation is known, removal should be practised at or beyond that point.

(4) That form of operation should be chosen which will do away with sloughing or pus production. Prevention of suppuration, of putrefaction in the stump and of systemic infection has been attempted by means of numerous devices and dressings. Removal alone is prevention. To frankly sever the cord at the skin margin with ligature of the vessels, or suture; one or both brings about safe, clean and prompt healing. Thereby, the navel of the second day looks like the navel of the tenth or fifteenth day under other methods.

The method used by him is to snip the cord with blunt-pointed scissors all around the skin margin. The sheath and gelatine are stripped backward with as much jelly as possible, leaving the vessels standing alone, and a fine silk or catgut ligature is put around. The vessels are cut off short and the stump tends to roll in. The stump may or may not be sutured. A dry gauze pad suffices for the dressing.

Objections to complete primary amputation: (1) Increased danger of contact infection, owing to operation on parts supplied with lymphatics, as compared with the ordinary ligation of vessels and jelly on parts having no nutrient capillaries or absorbents; (2) lack of drainage in case of infection; (3) danger of concealed secondary hemorrhage (hematoma) after the suturing method; (4) inaccessibility of vessel ends in case of bleeding as compared with facile placing of

[5] British Medical Journal, February 18, 1899.
[6] Transactions American Gynecological Society, 1899.

second ligature where stump is long; (5) the risk of striking an umbilical hernia; (6) as this is surgery it is not yet adapted to the general practitioner.

To admit most of these objections is to confess that we, as instructors and surgeons, fail in our attempts to drill the students in hand cleaning and instrument boiling, and avoidance of unclean contacts. The method requires hands no cleaner than for a vaginal examination and far less wound knowledge than for the repair of perineal injuries.

CÆSAREAN SECTION IN SEPTIC CASES.

It is beginning to seem quite possible that, owing to the increased knowledge of the technique of Cæsarean section, the comparative ease with which it is performed, and the low mortality rate, that operators may be led to resort to the operation in unsuitable cases, particularly those with possible septic infection, for which some other method of delivery would formerly have been found. We have considered that a dead child or a septic mother were almost positive contraindications to the Cæsarean operation, and if occurring with a pelvic tumor, the abdomen should be opened, the tumor removed and the child delivered by forceps or craniotomy. With this in mind, the case of Docktor[7] is of special interest, with his report of 21 cases collected in literature. The patient was a multipara admitted in labor, expulsion of the child being impossible because of a tumor growing from the sacrum. The necessity of Cæsarean section was positive; choice of method only remained. On extracting the child, which was dead, the appendages were found partly decomposed and the uterus contained offensive pus. Fortunately, through efficient help, the uterine contents were kept outside the abdomen. The womb was amputated, a strand of gauze was passed through the cervix for drainage and the upper borders of the stump united. The recovery from sepsis was tedious. She had a characteristic eruption, a pelvic exudate and pleuropneumonia, but recovered sufficiently to be removed to the medical department of the hospital, where her lung symptoms indicated a permanent tubercular infection.

Docktor's[8] studies of the 21 cases collected lead to these conclusions: The incision of the uterus, the extraction of its contents and suture of the womb was followed by a mortality of 40 per cent., while those patients that recovered had prolonged fever. A still worse result followed amputation of the uterus, with extraperitoneal treatment of the stump, the mortality of these being 40 and 50 per cent., and the patients who recovered suffered from pus formation in the stump and various septic complications. Those cases treated by amputation of the uterus, with intrapelvic treatment of the stump, did better than either of the foregoing, their mortality being 14.27, including the complications of sepsis, as in the other methods of treatment. So far as the comparison goes at this point, the best results are obtained by amputation of the uterus, with intraperitoneal treatment of the stump. The removal of the entire septic uterus and its contents, if possible, without contaminating the abdomen, would be the most desirable operation. This was effected in two cases by total extirpation of the pregnant uterus, through the abdomen, and in each case the mother recovered without complications. From these cases his conclusion is that in cases of septic infection, affording considerable risk in delivery through the vagina, the womb and contents should, if possible, be removed without being opened in the body of the mother.

[7] Archiv für Gynäk., 1899.
[8] American Journal of the Medical Sciences, January, 1900, p. 112.

THE ANTENATAL AND INTRANATAL FACTORS IN NEONATAL PATHOLOGY; AN ATTEMPT TO EXPLAIN THE PECULIARITIES OF THE MORBID STATES OF THE NEW-BORN.

Dr. J. W. Ballentyne,[9] of Edinburgh, presented a paper on this subject at the meeting of the American Medical Association at Columbus. The article is an able and interesting one, and the following is the summary of his conclusions: From all that has been said above it is clearly evident that if the characters of the diseases of the new-born infant are to be understood, it is essential that account be taken, not only of the facts that the infant's organism has just passed through a period of traumatism and is passing through one of readjustment to meet new requirements, but also that during the nine months of intrauterine life which precede birth, it may have been the sphere of morbid processes which have left their impress on it. It may come into the extra-uterine environment already diseased and malformed, or predisposed to some pathologic development. Like pregnancy, neonatal life is an epoch which has a physiology in many respects peculiar to itself, and which borders very closely on the pathologic, tending very easily to pass over into it. In a certain sense, the ordinary vomiting of pregnancy is to the uncontrollable form as the ordinary "physiological" jaundice of the new-born is to pernicious icterus neonatorum. Further, just as every woman brings with her into her pregnancy the results of her past pathological history, so the new-born infant brings with him, out of his antenatal life into his neonatal existence, the effects of any morbid processes which may have attacked him *in utero*. In this way the pathology of pregnancy and the maladies of the new-born infant are both invested with peculiarities. The peculiarities, therefore, of neonatal diseases are not inexplicable, but are the direct outcome of the action of the antenatal and intranatal factors on the organism at this period of life.

[9] Journal of the American Medical Association, November 18, 1899.

Reports of Societies.

SUFFOLK DISTRICT MEDICAL SOCIETY. SECTION FOR CLINICAL MEDICINE, PATHOLOGY AND HYGIENE.

J. BERGEN OGDEN, M.D., SECRETARY.

REGULAR meeting, Wednesday, November 15, 1899, DR. H. F. VICKERY in the chair.

DR. R. F. CHASE reported

A CASE OF BRADYCARDIA.[1]

DR. KNIGHT: The case reported is a very interesting one. The slowest pulse I remember in a case of valvular disease was in one of aortic disease after compensation was lost, when the patient was within a few days of death, and for a few days the pulse would

[1] See page 139 of the Journal.

beat either at the rate of 18 or at a very much higher rate. I have forgotten exactly what the higher rate was. There was a regular alternation. It would go along at the rate of 18 for several hours and then change to the higher rate and go on again several hours and then back again, and pursued that course several days until the patient died. I think that is the lowest I have ever counted — 18. There are cases on record where it has gone a good deal lower than that.

DR. TWOMBLY: I saw the case with Dr. Chase on March 11th, and at that time I counted the pulse very carefully; it was 28. There was also a very slight systolic murmur at the apex. It was not remarkable and you would not notice it unless you listened pretty carefully for it, but having had my attention called to the fact that there had been one, I naturally made a careful examination, and found it unmistakably present. How long the murmur had been there, or to what extent it had exerted any effect on the slowing of the pulse, I think it is very difficult to say. Dr. Chase has watched this case very carefully, and obtained a good many records of the pulse rate, and in no case, he says, has it been over 36 per minute. I wish he had drawn the inferences, which I hoped he would make, of the relation of this slow pulse to age. We know that there are different forms, one of which is a temporary slow pulse which gradually resumes its natural number of beats. I have seen it in the case of a growing boy who had a great deal of malaria, when the pulse was down to 40, but that condition was not permanent. When we get it in the cases of old men, the continuance of a very slow pulse like this must be thought of and regarded as a very dangerous condition and the prognosis is a very grave one. If we look up the literature we find very few such cases. In those that have been seen and reported, it has been found that old men, where there is not the temporary but the permanent bradycardia, live but a short time, dying within one or two years after observation, and even at a shorter period. It certainly is an instructive case; because we had an old man, looking very well, jolly and seemingly very comfortable, and yet there was that condition which, when he had walked a little way to his daughter's house, resulted in the fatal overtaxing of the heart muscles.

DR. WHITTIER: This subject presents one of the most remarkable, as well as one of the most undesirable forms of abnormal variation in pulse rate, one that will always offer to the clinician problems of the most perplexing type. Whether the abstract condition is constant or paroxysmal, physiological or pathological, a reflex of diseased or disordered action in other functions, notably of the digestive apparatus, or associated with arterial scleroses, with myocardial changes, or with unmistakable evidences of valvular disease, whether arising from chronic intoxications from lead, alcohol, or renal disease, or in connection with acute infections, etc., there will remain a very considerable percentage of cases wholly unassignable to changes appreciable during life, or discoverable after death.

Slow pulse, constant or paroxysmal, should be regarded with great apprehension; seemingly, it is more frequently connected with organic disease, particularly with disease of the coronary arteries or of the myocardium, than tachycardia is. I believe that life insurance companies will accept risks with a high pulse more readily than they will those classified as bradycardiacs; slow pulse, more frequently than rapid, influences "expectancy of life." It is extremely difficult to demonstrate the physiological origin of bradycardia; its association with pathological processes is much closer and more intimate than is generally thought. Sub-standard pulse rate is much more to be dreaded than super-standard; it is relatively infrequent, experience shows it to be rarely met with, and when seen does not receive the attention its harmful influence commands and should render imperative. We are inclined to underestimate the significance of abnormal slow pulse, excepting in connection with structural changes, and then more attention is paid to the supposed cause, which may range from catarrhal jaundice to long-standing intestinal disease, cardiac, renal, hepatic, etc. This frequent association of bradycardiac and organic disease leads us to regard as unimportant the abnormal slow pulse of undetermined origin. It is needful, in all these cases, to exercise special care in the examination of the patient and to determine the question of uniformity of radial and cardiac pulse. I have seen, recently, a difference of 24 between wrist and apex and remember well a case of paroxysmal and slow pulse, not irregular nor intermitting, but regular at one-half the apex rate. These cases must be regarded with extreme apprehension, for the condition is grave wherein the ventricular contraction is so insufficient and incomplete as to fail to transmit pulse wave to the radials.

I somewhat hoped the subject of rapid heart would be included in the paper presented, for there seems to be larger interest in the aspect of abnormal heart rates — it may be because people survive the influences of high rate and prolonged rapid action exceeding all our preconceived opinion of the heart's endurance. The most energetic and, in most regards, the most interesting member of this group, is paroxysmal tachycardia of the functional neurosal type. In such cases the pulse rate, without warning or appreciable cause, by quick strides reaches a rate seemingly far beyond the limit of more than very few hours of cardiac action, and yet, I think the Massachusetts General Hospital records show a case of pulse rate of 180 or more during twenty-seven consecutive days.

I followed for a number of years a gentleman, whose first attack, of thirteen hours' duration, gave a pulse rate of 200 to 210. Dr. Ellis saw him in consultation and gave a lethal prognosis, immediate and from cardiac exhaustion; however, the patient survived not only the initial and exceptionally prolonged paroxysm, but also numberless similar paroxysms, covering several years and finally died of malignant disease of the lower bowel. The sphygmograph seemed to offer the only explanation of the heart's tolerance of such rapid movement, for in this and in other cases, from 178 to 200 pulse rate, the pulse was of low tension and the expenditure of energy as shown by the height of the primary wave was not more than one-third normal. The tracings submitted to us this evening are evidently of high arterial resistance and some of the primary waves are so short and other elements so defective as to suggest impending cardiac collapse.

There may be preventive remedies for this class of cases, and it may be also that there are palliative measures fairly constant in their effect, but of one thing I am certain, that is, that digitalis is dangerous;

it seems to make the patient somewhat more comfortable, but I believe that it shortens the period of the heart's viability in all cases where tachycardia or bradycardia is an element in organic disease, notably of the myocardium. Strychnia, however, in combination or alternating with nitroglycerin, offers the best promise of assistance.

DR. J. W. COURTNEY read a paper entitled

A CASE OF MULTIPLE CEREBRAL HEMORRHAGES FROM CHRONIC LEAD POISONING, WITH NECROPSY.[2]

DR. PRATT: I have been fortunate to make the autopsy in two cases of hemorrhage into the pons; this case of Dr. Courtney's and one that occurred at the City Hospital last spring. There have been 26 cases of cerebral hemorrhage among the 1,138 autopsies performed at the Boston City Hospital since January 1, 1896. The case just mentioned was the only one in which the hemorrhage involved the pons. The subject was a man of forty-five. Singularly enough, he also was a painter by trade. There was marked arteriosclerosis, chronic interstitial nephritis and hypertrophy of the heart. The hemorrhage was a centimetre and a half long and five millimetres in its greatest width. Unfortunately, the hemorrhage took place in the early morning hours and the character of the convulsions which occurred was not carefully observed. He died a few hours later.

Gowers states that the hemorrhage is often spherical in shape. In both of our cases it was fusiform, with the long axis extending longitudinally through the center of the pons. This agrees with the description von Monakow gives in Nothnagel's "System." Bode collected 78 cases of hemorrhage into the pons. In 46, death occurred within 24 hours.

Relative to the size of the hemorrhage, it may be interesting to state that, according to von Monakow, it varies from a hemp-seed to a walnut. The hemorrhage in Dr. Courtney's case measured 1.6 centimetres in length and two to nine millimetres in width.

DR. V. Y. BOWDITCH read a paper entitled

THE MASSACHUSETTS STATE HOSPITAL FOR CONSUMPTIVES AT RUTLAND; ITS PURPOSE AND THE WORK ACCOMPLISHED DURING ITS FIRST YEAR.[3]

DR. KNIGHT: It is hardly necessary to say much to this audience in favor of sanitarium treatment of this disease. I wish some of us might have an opportunity, in some way, perhaps to approach the public. However, that will be done by the reports of the work of this institution and by the necessary work which will have to be done before the Legislature. I am very proud certainly that our State was the first to undertake this work and of the little part which I had in it. The whole question of treatment of disease in this way has developed gradually of course, largely through the initiatory work of Brehmer, but still I think, aside from that, that the experience in hospitals, in homes for consumption which were supposed to be for incurables, and the result in general hospitals of patients getting well who had undoubted tuberculosis, turned attention in that direction. I remember in Bellevue Hospital years ago, when I was assistant to Dr. Flint, he said that patients with tuberculosis who came into the hospital all improved wonderfully. It did not make much difference whether we gave cod-liver oil or something else. A ward was set apart for patients to whom no medicine was given, but good diet, etc., and he found they improved just the same. The food and regular life and hygiene in every way put them on the road to improvement and recovery in some cases, and so in the hospitals for consumption, the homes all over the world, in Brompton and in the others, there have been cases of cure. I have been interested in seeing in a recent work an enumeration of the homes, hospitals and sanitaria of all kinds for tuberculosis, and finding that in this country we stood pretty well up in the list. Germany has the largest number, something over 40, of homes and sanitaria for tuberculosis, and the United States between 30 and 40, France 20 odd, and England 20 odd; but now the institutions which have been starting up for the last ten or twelve years in almost all the countries of Europe, particularly in Germany, also an excellent one just out of Vienna, under the direction of Professor Schroeter, also one in Italy, and in most of the countries, in fact, are more on the plan of the strict sanitarium where patients are under constant supervision and proper treatment.

I agree entirely with what Dr. Bowditch says, that a patient has a great deal better chance of recovery from tuberculosis in a sanitarium than in private life, no matter how rich he may be. It is the one disease which of all others requires constant watchfulness on the part of somebody who understands it, and I have hoped that in these institutions a class of nurses will come up with whom we can trust our patients, who will understand the general management of them so that well-to-do patients who want to travel can do so with safety with these educated attendants. I had a very good illustration this summer of what may happen to a patient who is going on his own responsibility. A gentleman, who had followed rules very carefully, had gone on for about two years struggling very successfully against tubercular disease, had been perfectly willing to live the life which I advised, but he felt that he was obliged to attend to his business, with a certain amount of recreation in the summer. I happened to be in a hotel with him this summer. I think it was great good fortune that I was. He came to me one day and said: "I feel chilly and uncomfortable and I think I will go and take a long horseback ride and see if I can sweat it out." I directed him to go to bed. I found he had a very high temperature brought on by over-exercise. He thought that if he rode horseback ten miles it might do him more good to ride twenty or thirty. I kept him in bed ten days and his fever left him entirely and he recovered from that setback, but his pulse did not become normal until to-day. To-day for the first time he has a normal pulse. Fortunately there was no lighting up of the pulmonary disease. He had an attack of fever which lasted ten to fourteen days, and weakness afterward, but recovered. If I had not been there, I think he would have had a very much more serious time, perhaps been put back fatally. There was a man doing his best on his own responsibility; if he had been in a sanitarium that would not have happened.

I think that we all can do perhaps better than we have done, not only in putting patients in a sanitarium, but in beginning treatment of whatever kind earlier; not only finding out the disease ourselves, and admitting it to ourselves in an earlier stage, but also as a rule telling the patient the gravity of the situation. The patient will not do what he ought to do unless he

[2] See page 136 of the Journal.
[3] See page 127 of the Journal.

comprehends the seriousness of the affection, but I have never found any ill effect from making the patient aware of his condition. Even Hippocrates says, if you treat the consumptive patient in the beginning he will get well. What I mean by early is to take the patient within a few weeks of the beginning of his cough, before he seems sick, before his friends feel that he is ill at all, as soon as the nature of the affection is determined. The majority of patients I have sent to Colorado, where I have had a great many recover, have been patients who seemed well when they went and seemed well there, nobody mistrusting they were sick. That is the time to send them. I had a consultation a few weeks ago with a physician in the neighborhood. He had a patient who began to cough last spring and various things had been suggested for relief. He went on from bad to worse. In the conversation I had with this physician he said: "I haven't much faith in the treatment of these cases." Suddenly he started up and said: "Perhaps I don't get hold of them soon enough." That is the whole business. If we can send patients into sanitaria within five or six weeks of the recognition of trouble, as we often can, if we take the trouble to thoroughly investigate, especially now that we can examine the sputum, we will get recovery in a very large proportion of cases.

Dr. Otis: I am sure that Dr. Bowditch, in thus presenting so admirably his year's experience and results at Rutland, has done to the profession as well as to the laity of the State an invaluable service. There are many of the profession still, I fear, who are unappreciative of the very great advantages of the hygienic-dietetic treatment of phthisis and the systematic methods of enforcing it in vogue in this sanitarium, and it will be a long time yet before they are fully realized both by physicians and the people. Only this morning an intelligent gentleman was in my office who had incipient pulmonary tuberculosis, and as I was explaining to him the plan of life he should pursue and the importance of outdoor air night and day, he seemed surprised and remarked: "Why, doctor, I thought I had to keep indoors with this disease," and I have no doubt that he illustrates the ideas of many consumptives regarding the management of their disease. I remember Dr. Baldwin, of Saranac Lake, told me of a young woman whose disease had been arrested at the Adirondack Cottage Sanitarium, and who, on her return to her home in Hartford, Conn., continued the habit she had learned at Saranac of sitting out of doors, even during the winter, much to the astonishment and horror of her neighbors, who looked for some untoward event in consequence. She remained well, however, and was the better for her daily and long-continued doses of outdoor air.

Dr. Bowditch has referred to the educative effect of the sanitarium treatment, and this, I believe, is of very great value. The patients become apostles when they return home and preach to others of the hygienic measures by which they have been cured; of the value of pure air by night and day; of the avoidance of overheated and ill-ventilated rooms; of the value of good food and the care of the sputum — such personal influence must be of very great importance in the prevention of the disease.

The best results of sanitarium treatment which up to the present time have been presented are, I think, those of Dr. Turban, of Davos, Switzerland, which he has published this year. Of 408 cases dismissed from his sanitarium, he reports 66.1 per cent. relatively or absolutely cured, and of these, 97.6 per cent. were of the first stage, 73.2 per cent. of the second, and 23.6 per cent. of the third. Subsequently he communicated with these cases who had been out of the sanitarium from one to seven years, and he found that 48 per cent. of the whole number remained relatively or absolutely cured, as attested by a physician's examination, and of these 80.4 per cent. were of the first stage, 48.8 per cent. of the second, and 17 per cent. of the third; surely most excellent results. Dr. Bowditch, in his 114 cases, shows wonderfully good results also, and without the advantages of the high altitude climate as in Turban's cases. Such results could not have been obtained, I believe, either in this or any climate *outside* of a sanitarium.

There are a number of problems which the sanitarium movement brings up. One sanitarium in a State like this is only a beginning, and I fully believe that when the value of the Rutland institution is fully appreciated others will be demanded by the people, and some of them for a rather different class of persons, I hope, from those the Rutland Sanitarium now receives. Looking at the photographs of the Rutland inmates you notice they represent a refined class of people. The worthy working class who, when they are obliged to give up their occupation, become penniless, ought to have an opportunity for *free* sanitarium treatment. Fifty cents a day is as impossible for them as five dollars a day. This class — the working people — is a very important and large one, and provision for sanitarium treatment should be made possible for them. We need, indeed, in many of our well-known health resorts such carefully conducted institutions as the one at Rutland, to which we can with assurance send our well-to-do patients. If we were assured that at Colorado Springs, for example, there existed an institution as admirably conducted as Dr. Bowditch's at Rutland, we should feel greater security in having our patients in them and expect better results than from the so-called open-air treatment, which is often a go-as-you-please one. I remember at the last meeting of the American Climatological Association, one of the gentlemen read a paper upon the management of patients in Colorado, and on being asked how many hours a day he was able to keep his patients out of doors, replied, only about five and one-half hours in winter, on account of the difficulty of exercising proper control over them. With the magnificent climate in Colorado, under the direction and control of a sanitarium, we ought to expect equally favorable results as those at Davos.

With regard to gymnastics, to which Dr. Bowditch has referred, I desire to utter a word of caution regarding their use, as indeed of all exercise. It is well to bear in mind that in the treatment of phthisis overexertion is to be strenuously avoided, and in certain conditions, as the febrile, all exercise is to be interdicted, as Dr. Knight's illustration has just shown us. Every diseased organ needs rest in order to recover itself, as Dettweiler has so well shown in the case of the lungs. I do not wish to be understood as opposing lung gymnastics; I consider them a valuable adjunct in treatment, only the cases must be selected with the skill and care which Dr. Bowditch exercises with his. With regard to the length of stay in the sanitarium, it should be long enough to obtain the best results. With the 408 cases of Turban's the average residence was

two hundred and twenty-five days, about seven months. Dr. Bowditch's cases averaged four months, and in the sanitaria for the poor in Germany, according to Cornet's recent statement, the average was only about three months. Cornet does not regard this as long enough to obtain the best results, but it seemed to be a pecuniary necessity. Once having established free sanitaria for the poor, it would be a pity and poor economy to dismiss a patient before he had obtained the maximum of benefit the sanitarium is capable of affording him. Another very important problem is the matter of proper occupation for a patient after he leaves the sanitarium, to which Dr. Bowditch has referred. A great many cases come from unwholesome, indoor occupations, to which they ought not to return if they are to maintain their restored health; and in some way they must be aided in securing work which will be wholesome and if possible keep them out of doors. Some association perhaps might be found to accomplish this. Then, again, when you have a sanitarium for the laboring people, some arrangement for the support of their families must be made while the bread-winner is being cured and so taken away from his work which sustains his family. What a common occurrence it is for the poor consumptive to continue at his occupation almost as long as he can stand up, and thus destroying his chances of recovery or arrest.

These are some of the problems which will come up for consideration and solution in connection with sanitarium treatment; but I do believe that the great wave of enthusiasm which is spreading over the civilized world, in England of late especially, and beginning also in this country, in favor of sanitaria as affording the best and most hopeful treatment for phthisis, especially for the poor, will continue, and that the authorities of the different States will recognize that it is an economic measure as well as a philanthropic one to restore to their occupation and usefulness, through sanitarium treatment at public expense, the thousands who would otherwise become a burden sooner or later to the State.

DR. WORCESTER: I am only too glad to have the chance to endorse all that has been said, and at the same time I am glad of the chance to point out some of the difficulties the institution has had in starting. It was my fortune to be one of the trustees appointed to establish the hospital, but I am no longer a trustee, and so perhaps am more free to tell some of the woes and miseries which my former colleagues on the board must still endure. The hospital cost more than the Legislature appropriated, and that was in part due to our ignorance. We did not know how impossible it was to build a complete hospital with the money the Legislature allowed. Had we known more, however, and undertaken less we should not have had the institution at all. Now the trustees are again in somewhat the same predicament; the appropriations this year are not sufficient to pay the running expenses and it will be necessary for the trustees to ask for a larger grant this year and also a grant to make up the deficiency. How far the popular enthusiasm which now seems to exist for the hospital will come to the rescue of the trustees and carry them through I do not know, but I imagine that the friends of the hospital, the medical profession especially, which is most competent to recognize the good of it, will have to put a pretty generous shoulder to the wheel to carry the thing through. The hospital will hold only 200 at most, and it was full, as Dr. Bowditch says, within a few months, so there is no use in our thinking of it, except as a splendid practical illustration of what may be done in fighting tuberculosis. We have got to have many other such institutions scattered through the State. We have got to put a hundred times more effort into this business than has yet been put.

I cannot help drifting from Rutland and speaking a little of similar work I have tried to do in Waltham. It certainly has taught me what may be done and ought to be done. Before the Rutland institution was started I undertook to take consumptive patients into our little general hospital, which has only sixty beds, and there I obtained results strikingly successful. I think now this result was largely due, as Dr. Bowditch at the time pointed out, to the hygienic surroundings. Those patients were certainly stuffed with eggs and beef and milk and had all the fresh air there was, and they certainly did well; but after going back to their homes most of them did very poorly. Now what is the use, it may be asked, of getting a man or woman built up in any of these institutions and letting them go back to the conditions in which they were before? They may live a year or two longer, but then they have been away from their families a year or two. It is very easy to be a pessimist in the matter, but it is also possible to be an optimist. It is not necessary that they should go back into the same unhygienic conditions, and care must be taken of them in some organized systematic way. I have heard of an Irishman who left the Rutland hospital, and trouble arose between him and his wife because he insisted upon sleeping with the windows open. That illustrates one difficulty.

And then I have sometimes questioned if it is a real benefit to separate families as much as is necessary if going out of the county and miles away is a necessary part of the programme; but it is a very different thing if the sanitarium treatment can be employed in the town where the patient lives. Of course, it is an advantage to a patient to leave the low altitude of Boston and all this dreadful air that so many of you have to breathe, and go out into the country, but it is not necessary to go as far as Rutland. Even if there is such a great advantage in breathing higher air and living in it there is a corresponding depression in returning to one's home. I have always felt it was no special advantage to send a person to Colorado who could not have his family go with him, because it is so seldom possible for a patient to come back and live here. If the same horseback riding and outdoor life was employed in Massachusetts that is fashionable in Colorado Springs, would not a great many who have received benefit there have been also benefited had they stayed here and gone through the same régime? If we can only persuade people who are afflicted with tuberculosis that it is absolutely indispensable that they shall have everything that is nourishing in the way of food and any amount of oxygen, and if we can persuade them to carry out that régime here, I think in all ways it is very much better. Of course the little sanitaria started through the State will do much to teach people. But there must be a sanitarium in each town and city to teach the people in the towns and cities what to do. It is all very well to read reports about this work, but the many will never see or hear about it, and so we shall go on as

we have been going on unless the medical profession rises from its apathy. It seems to me, gentlemen, that the medical profession is most blamable in the treatment of tuberculosis. I am ashamed of myself to think how many times I have neglected a consumptive. There has been more lying on the part of the medical profession in regard to consumption, I believe, than can ever be atoned for. We know how easily we shift them off. The first time we think it is not so, and after we think it is so, we think it is not best to tell them so, and then we go through the farce of discussing with a relative whether it is best to tell the patient. I am thankful to hear Dr. Knight speak so emphatically as he has upon that subject. If the truth can only come into the treatment at the start, it will do a large part of good we trust later to obtain from oxygen and higher altitudes.

And now I cannot help adding that it is not enough to fold our hands and trust to fresh air and good food and give up all idea of other therapeutic agents. Hygiene is all well enough in its way, but it is merely an adjunct in the treatment of tuberculosis, and no matter how unpopular the subject is, I believe that in the use of tuberculin we are yet to find the proper treatment of that disease. I have used it year after year and I believe in it more and more, and I wish very much that instead of trying some of the serums that never will amount to anything anyway, there might be, in some of the hospitals devoted to the treatment of tuberculosis, a chance of carrying out systematically and thoroughly the experimentation that is going on and has been going on all these years in the wards of the Charité in Berlin. It is only too sadly true that tuberculin is an exceedingly dangerous thing to meddle with, and that there has been a great deal of mischief done in the ignorant use of it, and then we have only just lately found out that the tuberculins we have been using have been made from different varieties of the tuberculous germs, which have very different effects. There is great difference in the effect of tuberculin made from the bovine tuberculous germ and from the human tuberculous germ. The tuberculin from the bovine produces very much less reaction in man. I am one of those who believe that human tuberculosis never came from bovine tuberculosis any more than variola ever came from vaccinia. When you see, as you can see in Prof. Theobald Smith's work, the morphological and physiological differences of the different species or varieties of the tuberculosis bacillus, and when you realize that until recently we have had no means of standardizing tuberculin, no one can wonder at the very varying results that we have had. I never shall allow myself to be caught on my feet in speaking about the treatment of tuberculosis without insisting that the medical profession must yet listen to the claims of the treatment of the disease by tuberculin.

Dr. Getchell: Speaking as a trustee I can only reiterate and emphasize what Dr. Knight has said. This year we shall be obliged to go before the Legislature with a deficit, and also a request for considerable sums of money for what seems to us to be absolutely necessary additions. The law called for an institution that should accommodate 200 patients. As Dr. Bowditch has said, under the contingencies of the additional expense that could not be foreseen the accommodations were curtailed, so that a part of the hospital that was intended for patients has been occupied by nurses and other members of the administration force; and the hospital is not doing the work that it should do. As you will see by the report, which will be placed in the hands of every physician in the State, an attempt will be made to remedy this by providing a dining-room which will relieve the rectangular buildings at the rear of the hospital, and which will give accommodation for servants and will enable those rooms to be used for patients. There will be another question which will arise in the Legislature, and it has already arisen, and that is the question of enlarging the hospital beyond the capacity for 200, and it is here we want and need the aid of every physician in the State that the Legislature may understand what the hospital is for. I am perfectly sure that many of them look upon the institution as an institution that is analogous to the insane asylum — that is an institution built by the State and for State charges. As a matter of fact, the people who come to the sanitarium are not State charges. The majority of them are people who have been earning their livelihood at the time of their admission or just previous to it, and as time goes on and the matters that have been brought forward to-night are recognized more clearly, the disease will be detected earlier by physicians, and the number of people who are earning their livelihood will be much greater. It is very important indeed, I think, that the Legislature should recognize this, and for help we look to the profession.

We find in the papers a good deal about the State aid for consumptives. Now it seems to me, that that is the best attitude for us to take at present in the matter. The people who come to Rutland only pay one-half of the actual cost. It costs some over $8.00 a week for each patient and the charge, at first $3.50, is now $4.00, and it seems to me, the idea ought to be as widely disseminated as possible that this sanitarium is built by the State as an aid and not necessarily as a place where people go and will be kept at the expense of the State. Under the present methods of administration, more than 200 patients cannot properly be cared for and unless the institution depart from the sanitarium idea it should not be enlarged. We are behind in our current expenses. The request was made of the last Legislature for $40,000 for current expenses, and at that time I think it was felt the hospital would not be filled as readily as it was. In February the full capacity was reached and the hospital has been full ever since. Furthermore, there were necessary expenses and those expenses have been taken from the current expense appropriation, ordinary repairs, matters that could not be neglected; so that I think at this time the appropriation is exhausted and a deficit is accumulating month after month. There has been the utmost attempt to economize. I think I am not divulging any secrets of the board when I speak of the difficulties that we have had this summer in regard to the matter of food. The administration has been between the two fires of insufficiency of means and the attempt to economize particularly on that most vital of all articles of food in a sanitarium, eggs, a matter in which undue economy is of doubtful wisdom. I have no doubt of the outcome. The Legislature of Massachusetts, when it has felt an expenditure for public purposes to be necessary, has always granted the means, but I do feel that every avenue of information will have to be used this year in order to enable the institution to go forward

with the work that it has, without question, very satisfactorily begun.

DR. PERCY: It seems to me it is hardly necessary to add anything to what Dr. Getchell has already said, but it has occurred to me as I listened to Dr. Bowditch's very interesting report that one thing he has omitted to say, and that is that another question may be solved and solved in a very short time in regard to the statistics of our hospital, and that is verifying a suspicion or an opinion which is entertained by a great many men now, that cases which are arrested in their environment are much more likely to remain so than cases where the disease is arrested elsewhere, and they return to their former environment. That is a very interesting problem the State is trying to solve, and, it seems to me, is bound to solve, and I feel confident the answer is to be a favorable one. Dr. Otis has asked several questions to-night and I feel deeply grateful to him for doing so. Among them, no problem has been more serious than the one in regard to the occupation of these people who come out apparently restored to health, and it is a matter still under very serious consideration. It may be met in a variety of ways, but, it seems to me, it must come by co-operation on the part of people interested, and if a corps of workers can be organized who will have the interest of those people at heart, we shall be able to do far better for them, and shall be able for the first year to provide for them in a way which is certainly in their favor. Another thing which constantly comes to the trustees is this problem in regard to children. No problem, the superintendent said this week, had vexed him more than what should be done with a little girl who came from the North End of Boston, who is absolutely restored to health and has absolutely no place to go. With regard to the children of mothers who are there, and who naturally have a very deep interest in them and are very lonesome without them, they are provided for in boarding-houses in Rutland. Already a nurse of the kind Dr. Knight spoke of, who has been trained in sanitarium methods, has opened in Rutland a home for cases not admissible to the hospital, where people can be sent with the idea of doing for them what cannot be done at any other place.

DR. BANCROFT: The city of Boston is making a move in this direction, but limited to a very small field. At Deer Island there is an institution where all tuberculous prisoners from the prisons of the city can be assembled in one building, that place being so situated that they can be kept out of doors as the circumstances demand. Then our two prisons will be freed, so far as the cell occupants go, of tuberculous cases, which is impossible now.

DR. BOWDITCH: In speaking of incipient cases, I am much struck with the fact that so many patients are sent for examination as incipient cases, merely because there are comparatively few signs in the chest. No regard seems to have been paid to the presence of a rapid pulse, high temperature and often bad digestion. Such cases are most unfavorable for treatment as a rule, and usually show the symptoms later of a general tuberculosis. The non-febrile cases are much to be preferred in any attempt to bring about an arrest of disease.

As to the necessity of caution in pulmonary gymnastics, too much stress cannot be laid upon this point. At Rutland classes are formed for this kind of exercise, but it is not used when, for any reason, rest seems indicated. For the sake of making variety for the patients, even baseball is resorted to, but with caution, and only the most vigorous are allowed to take part. In the past six or eight months, in consequence of the precautions taken, I know of no case that has received any injury from this form of exercise. Golf is now in use with excellent effect both on the mental and physical condition of the patients.

Dr. Worcester has spoken of the use of tuberculin therapeutically. He knows the respect that I feel for his views upon any subject, and yet on this point we have been, as it were, at the opposite ends of the pole on that question. Even as to its use diagnostically, I have held, as stated in this room several months ago, what may be an ultra-conservative position, because I was not convinced of its absolute innocuousness. From that position I have retreated somewhat, having felt that in a few cases I was justified in its use where other means failed and a definite diagnosis was imperative. As to its use therapeutically I am still a skeptic, although glad and willing to be convinced when absolute proof is given me. Dr. Worcester has spoken himself of the marked variation in the strength of the different preparations and under these conditions the indiscriminate use of the substance, except by those who have a knowledge of bacteriology, seems to me wrong. Under present conditions, with the means at our command, I should be unwilling to use the substance, unless more fully convinced of its efficacy.

Recent Literature.

Pyorrhea Alveolaris and its Relations to General Medicine. By JOHN FITZGERALD, L.D.S., Dental Surgeon to the Italian Hospital and to the National Hospital for Diseases of the Heart and Paralysis, Soho Square. London: The Medical Publishing Co., Ltd. 1899.

The author states in his preface that the object of this little book is to point out the bearings of this disease upon medical practice and to indicate simple methods of treatment within the reach of the family physician.

The book is interesting from many points of view and contains many valuable suggestions for the diagnosis and treatment of this truly formidable disease. Attention is called to the secretion of the gingival organ and the importance of not mistaking this secretion for pus. The effect of mal-occlusion of the teeth is pointed out, although hardly enough importance is given to this as one of the predisposing causes of the disease.

We are inclined to believe that the presence of lactic acid in sufficient amount to have any serious bearing upon the disease is not sufficiently proven. It is also doubtful if the invasion of the pockets at the sides of the roots can be called a "streptococcus" invasion, as the observations of bacteriologists in this country would tend to show that the staphylococcus forms only are generally found in these pockets and are probably responsible for the production of pus.

The author has evidently not too high an opinion of the ability of the average dentist to treat this disease and has a somewhat exalted opinion of the tech-

nical skill of the average medical practitioner. He gives directions for the treatment of the disease by the physician, and gives a list of the instruments likely to be required in the course of treatment, and in doing this we think that the author has rendered his work almost valueless.

The amount of time and training that would be required to train the average physician to recognize the varying aspects of the disease and to use the necessary instruments with proper skill would not be less than the training which would be necessary to render the average dentist competent to perform an operation for appendicitis.

While we believe that the attention of the physician should be called to the importance of an early diagnosis of pyorrhea alveolaris we are equally confident that its operative treatment should be left in the hands of the dentist.

Diseases of Women. A Treatise on the Principles and Practice of Gynecology, for Students and Practitioners. By E. C. Dudley, A.M., M.D. Second edition, revised and enlarged. Philadelphia and New York: Lea Brothers & Co. 1899.

The publishers' part of this second edition of a book which has now become standard is admirably done. The text is clear, the plates numerous and admirable. The arrangement is very original, and at first strikes one as odd, but after reading the book through it becomes evident that it is admirably natural, leading the reader easily from one subject to another, and that it is extremely easy to find any subject which one wishes to look up. It is especially unique in one respect. It combines the careful treatment of detail which is characteristic of the older type of book, such as Emmet's and Thomas's gynecologies, with all the advantages of the modern operative school, in which latter respect it is fully up to date. One feels too often after reading the recent text-books that the author is a surgeon rather than a man equipped with a specialist's knowledge of the diseases of the female pelvis. This book is written by perhaps the most scholarly of American gynecologists, and shows it on every page. Each disease or lesion is treated in the most thorough way from the standpoint of the mechanical relations and pathology, before treatment is taken up. In spite of its being limited to but seven hundred pages, it is encyclopedic in its thoroughness and completeness.

Part I, devoted to General Principles, is admirable in the clearness and detail of the descriptions which it furnishes for a beginner. In Part II, on Inflammatory Infections, the chapter on Pelvic Cellulitis is especially timely. That on the Treatment of Salpingitis, Ovaritis, and Pelvic Peritonitis is very thorough and useful. In Part III, devoted to New Growths and Malformations, the pathology is remarkably clear, the directions for diagnosis good. In Part IV, Traumatisms, the descriptions of the lacerations of the perineum and cervix and their method of repair are most remarkably clear and good. Every beginner may learn from them how the operations should be done, while even the expert may learn something of value from reading them. Part V, upon Displacements, is thoroughly up to date, and is supplemented by an admirable chapter on Massage. Part VI, upon Disorders of Menstruation and Sterility, treats this complicated subject wisely and conservatively.

The book as a whole is perhaps our best text-book.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, FEBRUARY 8, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

Subscription Terms: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 Washington Street, Boston, Mass.

THE EVOLUTION OF SURGERY IN LONDON.

The growth and evolution of the profession of surgery will always be a fascinating study, nothwithstanding the fact that it serves the profession as the Darwinian theory served the race in tracing it back to a humble origin. The part played by the barbers and the barber surgeons, not only in surgical practice but as an organized body, in London from the earliest times even to as late a period as 1745 cannot but excite surprise in the mind of the modern student of surgical history. A very readable pamphlet entitled, "How Surgery became a Profession in London," by D'Arcy Power, reprinted from the *Medical Magazine*, gives an account of the history of the surgical profession in London which is well worthy of a review.

In the Middle Ages there were two types of surgeon in London, "the military surgeon and his peaceful though often brawling brother, the barber surgeon. The military surgeons, who formed rather the aristocracy of the profession, were in attendance on the kings and nobles as early as the third Crusade, (1189–1192), and in the thirteenth century there were formal gradations of rank, such as Royal Surgeon, Common Surgeon," etc. A clear view of their status earlier than 1415, however, cannot be formed. In that year, when Henry IV crossed the Channel to conduct the campaign which ended in the battle of Agincourt he took with him his physician, Nicholas Colnay, and his surgeon, Thomas Morestede. These gentlemen, who had respectively medical and surgical charge of the king's army, received the munificent recompense of twelvepence a day, in addition to the usual allowance of one hundred marks to the quarter, the pay, it is stated, of thirty men-at-arms, with a share of the plunder. They were each attended by three archers as a guard, each of whom received sixpence a day. Morestede took with him a staff of twelve surgeons as his deputies and assistants, who received sixpence a day, or the pay of an archer. This scale of remuneration was very liberal, the wages of a day laborer at the time being one penny a day.

As a day laborer in London nowadays earns three shillings a day, while a surgeon on probation in the British Army receives only eight shillings a day, the assistant surgeons and archers in Morestede's time would receive, if paid at the present time in like proportion, eighteen shillings a day, beside their share of the booty. So it appears that military surgeons of the fifteenth century were better paid than those of the nineteenth.

Let us hope that the authorities of the twentieth century will take a lesson from those of the fifteenth, and increase the pittance paid to the surgeons in charge of the health and lives of their armies, a change sorely needed to attract a better class of men into a service the importance of which to military success has been for centuries unaccountably underestimated! Nothwithstanding the remuneration, however, the service was so perilous that Morestede had such difficulty in securing twelve suitable assistants that he requested the king for authority to press twelve qualified men into the service.

A Guild of Surgeons, as distinguished from the Guild of Barbers, existed in London from time immemorial, but was first incorporated, apparently, in 1369, and occasionally harassed the members of the Barbers' Guild, who meddled with surgery to such an extent that in 1410 "certain good and honest folk, barbers of the city," appeared before the aldermen and demanded that "they peaceably enjoy their privilege, without the scrutiny of any person of other trade than barbers. And this neither in shaving, cupping, bleeding nor anything in any way pertaining to barbery or to such practice of surgery as is now used or in future to be used within the craft of said barbers."

The movement for a complete medical education, together with a more effective control over the practitioners of medicine and surgery, began in 1423, with a petition of the Mayor and Aldermen of London, praying that physicians and surgeons practising in London might be considered as a single body of men governed by a Rector of Medicine with the assistance of two surveyors of the Faculty of Physic, and two Masters of the Craft of Surgery. There was to be a common place of meeting, with rooms for examinations and lectures. . . . No surgeon was to be allowed to practise in London unless he had been examined by the Rector, the two Masters, and the majority of the Craft, and duly licensed by the Mayor and Aldermen. under penalty of one hundred shillings fine. A patient unable to pay a fee might appeal to the Rector and Masters in Surgery, who would assign him a good practitioner, "busy to take heed of him without expense."

For an account of the career of the distinguished Dr. Gilbert Kymer, the first Rector of Medicine, we must, for lack of space, refer our readers to the original article. This "Conjoint Faculty of Medicine and Surgery" was, while it lasted, formidable to the Guild of Barbers, but it probably lasted not longer than two years, after which the two bodies of physicians and surgeons each went their own way till 1435, when the surgeons appear as an established fellowship, with a code of laws for its government. Thomas Morestede was one of the first seventeen members agreeing to the ordinances of the fellowship. In 1462 the guild obtained a charter of incorporation, and in 1492 received a grant of arms. In 1493 it was on friendly terms with the Barbers' Company, and in May of that year entered into a composition with that body which recognized the independence of the two fellowships of "surgeons enfranchised within the City of London and of barber surgeons and surgeon barbers enfranchised within the said city." No more is heard of the Guild of Surgeons till 1540, when they were formally united with their old competitors to form the "United Barber Surgeons' Company."

In the years immediately preceding and following this consolidation surgery reached the lowest ebb, and was of no account as a profession, for an act of Parliament was passed allowing any quack to practise. Of the history of the little band of surgeons, Thomas Gale, William Cloues, John Halle, John Read and John Banester, who, working independently at first, afterward banded together to lift their profession from the mire, Power's article gives a most interesting account, full of anecdote and quotation, which is well worth reading as setting forth the difficulty of getting the public out of the hands of ignorant pretenders. It seems that members of nearly as many trades put themselves forward as practitioners of surgery as do at the present time. Master Cloues mentions painters, glaziers, tailors, joiners, cutters, cooks and chandlers, as well as "tinkers, tooth drawers, pedlers, ostlers, carters, porters, horse gelders, horse leeches, idiots, apple squires, broom-men, bawds, witches, conjurers, sooth-sayers and sow gelders, rogues, ratcatchers, runagates and proctors of spittle-houses, with other like rotten and stinking weeds which do in town and country without order, honesty or skill, daily abuse both physic and surgery," etc. The gradual elevation of the Barber Surgeons' Company through the efforts of such men as these whose histories are given, their establishment of public dissections and lectures, with a fine for non-attendance, make a story of surpassing interest.

The stories of John Woodall, who discovered during the Elizabethan era that lime juice was a preventive of scurvy, and of his effort to free the surgeons from the impositions of the physicians, of his successor, Richard Wiseman, of Cheselden, Sharp, Percival Pott and Hunter, bring the story down to 1745, at which time at last the surgeons seceded from the Barber Surgeons' Company, and the Surgeons' Company was organized. Surely it took time enough to free surgery from its tonsorial associations and place it on its feet as a profession. Cheselden had raised surgery as a manual art, Hunter left it richer in pathology, but to Pott our author gives the credit for the social improvement which took place during the Hanoverian

dynasty. At the beginning of the present century the higher rank of surgeons had been established in a social position, as is evidenced by the lives of Sir Astley Cooper, Sir William Lawrence and Sir Benjamin Brodie.

A brief review such as this can give but a slight idea of the interest and value of such a study of professional history as is embodied in Power's article, which will repay the reading by all who are interested in the story of the struggle of the surgical and medical professions from humble and obscure origin to the position in which they belong, a study which ought to be worth the while of every enlightened practitioner.

SANITARIUMS FOR TUBERCULOSIS.

The recognition of the fact that tuberculosis is a highly preventable and in many cases a curable disease has led to an entire change of front in the attitude of the community toward it. By degrees the air of hopelessness surrounding the tuberculous person has given place to quite a different feeling, and with this changed feeling has come the natural desire, first on the part of physicians and then on the part of legislators to take an active interest in the treatment of the afflicted class to which such a person belongs. As a consequence, institutions have come into existence for the rational treatment of tuberculosis, at first regarded with suspicion, but now rapidly being accepted as a most necessary part of the hospital system.

A new impetus has evidently been given to this tendency in New York State, first, through the report from a committee of the State Board of Charities, the details of which we have noted in another column, and secondly, through the discussion recently held at a meeting of the New York State Medical Society. The committee of the State Board of Charities strongly recommended the establishment of local sanitariums, as the most efficient means of combating the disease, rather than crowding tuberculosis patients into one or two large institutions, possibly at considerable distances from their homes. Such a plan appears possible, both from the point of view of expense and ease of management.

Inasmuch as the régime of the patients should be hygienic, fresh air and good food and a certain amount of medical supervision, it should not be difficult to establish relatively simple and yet adequate hospitals in the neighborhood of centres of population. Elaborate buildings are certainly not required, and the equipment of such a sanitarium need be of the simplest. With the subsidence of prejudice regarding hospitals and sanitariums there is small reason to fear that such institutions would not be patronized, particularly if a slight stimulus in the shape of a law regarding precautions against infection were applied.

Drs. E. O. Otis and Vincent Y. Bowditch both spoke at the meeting of the New York State Medical Society from their wide experience in the care and treatment of tuberculous patients. Dr. Otis alluded to the desirability of securing legislative action in regard to tuberculosis, thereby bringing the disease under State control, as has been done, in a measure at least, in Massachusetts. Dr. Bowditch described the excellent work now being done at the Rutland Hospital, an example which should certainly be quickly followed by other States.

Others who spoke, among whom was Dr. Baldwin, of Saranac, simply echoed the general feeling of encouragement regarding the treatment of the disease by modern common-sense methods. No doubt continued perseverance on the part of physicians will finally lead legislatures to the complete recognition of the folly of longer delay in adequately providing for the hospital care of all persons ill with tuberculosis.

MEDICAL NOTES.

Plague. — The St. Petersburg plague board reports that bubonic plague is prevalent in Assyr, Mecca and Jeddah, and that, accordingly, this year's Mussulman pilgrimage to Mesopotamia is to be prohibited. In a recent attempt to eradicate the centre of plague infection in Honolulu, the fire started in the Chinese quarter for this purpose, was for a time beyond control, and threatened the entire city. Instead of two city blocks, an area of thirteen blocks was finally burned before the fire could be brought under control. A report from Major Blair D. Taylor, United States Army, in regard to the progress of plague in Honolulu, dated January 15th states that up to that date there had been 34 cases, with 27 deaths. The following week there were 12 new cases and six deaths. Plague has disappeared from Kobe, Japan, but is active in Osaka, taking the form of a lung disease which proves very fatal. Thirty-nine cases have been reported.

Small-pox in the West. — It is reported that small-pox is assuming considerable proportions in several Western States, on account of the evasion of vaccination and the refusal to obey the orders of the health authorities, on the ground that compulsory vaccination is a restraint upon the liberties of the people. As a daily paper says, "Perhaps a good-sized epidemic there might be useful for educational purposes."

Sir Michael Foster a Candidate for Parliament. — According to *Science*, Sir Michael Foster, professor of physiology in the University of Cambridge, one of the secretaries of the Royal Society, and last year president of the British Association, has consented to become a candidate for the University of London's seat in Parliament, vacant by the elevation of Sir John Lubbock to the peerage.

The "Maryland Medical Journal." — This journal, for many years published as a weekly, will hereafter appear as a monthly, beginning with the January issue. It will be published in Baltimore and Washington, considerably increased in size and improved in appearance.

SECTION OF A FIELD HOSPITAL GIVEN BY AN AMERICAN. — An American, Mr. Van Alen, now resident in London, has offered to provide a complete section of a field hospital for service in South Africa under the superintendence of the British Army Medical Corps, and his offer has been accepted.

OSTEOPATHY IN GEORGIA. — At its recent session, the General Assembly of Georgia passed a bill legalizing the practice of osteopathy. In spite of considerable pressure the Governor vetoed the bill.

INCREASE OF CREMATIONS IN LONDON. — In 1885 three bodies were disposed of by the London Cremation Society. In 1898 the number had risen to 240.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, February 7, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 121, scarlatina 53, measles 38, typhoid fever 11, small-pox 1.

DIPHTHERIA AND SCARLET FEVER IN MASSACHUSETTS. — The prevalence of diphtheria in Newton is about the same as it has been for a week or more. Three cases of scarlet fever have recently developed in Medford. In West Springfield the diphtheria epidemic is regarded as serious; the situation will be investigated by the State Board of Health. In the last six months West Springfield has had ten times as many cases of diphtheria to each thousand inhabitants as Boston. An order has been issued by the Medford Board of Health closing the Tufts and Lincoln School buildings in the South Medford district, on account of diphtheria. The prevalence of diphtheria is hardly to be regarded as an epidemic, since there are only about 15 cases, and only three deaths have occurred in two weeks, but the residents of the district have refused to send their children to the schools.

MEETING OF THE NEWTON HOSPITAL CORPORATION. — The annual meeting of the Newton Hospital Corporation was held February 4th. The report showed in general a satisfactory condition of affairs. New wards and other additions have enabled the hospital to meet the increasing demands made upon it during the last year. There are now accommodations for 150 patients. Particularly useful have been the isolation wards for diphtheria and scarlet fever.

LINCOLN SCHOOL IN MALDEN, MASS., TO BE REOPENED. — Notice has been given by the Malden Board of Health that the Lincoln School would be reopened on Monday, February 5th. It has been closed for the past three weeks, owing to the prevalence of small-pox in a neighboring house. One patient has recovered and another is rapidly improving.

TYPHOID FEVER IN OUTLYING TOWNS. — Fifteen cases of typhoid fever are said to have appeared on the route of a certain milkman in Brockton, Mass. A careful investigation by the State Board of Health has shown that the recent outbreak of the disease at Norwood, Mass., was due to the pollution of well water in which milk cans were washed.

AMBULANCE FOR SMALL-POX SERVICE. — An ambulance ordered by the Boston Board of Health some time ago, exclusively for small-pox service, is completed and in commission.

NEW YORK.

INCREASE OF INSANE CRIMINALS. — In his annual report, submitted to the Legislature January 29th, State Superintendent of Prisons Collins calls attention to the increase in the number of insane criminals, and states that 719, nearly 200 more than the buildings were designed to accommodate, are now crowded into the hospital at Matteawan. The over-population of this institution he regards as a very urgent demand for the earliest possible completion of the new hospital at Dannemora, for which an additional appropriation is necessary. A peculiar fact referred to is that out of 85 criminals sent to the hospitals for the insane during the year 40 come from the Elmira Reformatory, nearly as many as from the three State prisons combined.

A STATE HOSPITAL FOR TUBERCULOSIS. — On January 31st a hearing was given at Albany, by the Senate Finance Committee and the Ways and Means Committee of the Assembly, for the discussion of the bill recently introduced calling for an appropriation of $200,000 for the purpose of establishing a State Hospital for the treatment of incipient pulmonary tuberculosis. Commissioner Stoddard of the State Board of Charities and a considerable number of other medical men were present, and among those who spoke was Dr. Otis, of Boston, who gave some account of the establishment and work of the State Hospital for Consumptives in Massachusetts.

NEW YORK DIET KITCHEN. — The twenty-seventh annual meeting of the New York Diet Kitchen Association for the Relief of the Sick Poor was held on January 17th. Among the speakers of the evening was Dr. A. Jacobi, who incidentally alluded in terms of warm praise to the good results of the free distribution of sterilized milk by Mr. Nathan Strauss, who had persisted in his philanthropic work regardless of the ingratitude of some and the hostile criticism of others.

Miscellany.

LOCAL SANITARIUMS FOR TUBERCULOSIS IN NEW YORK STATE.

A REPORT has just been made by a committee of the State Board of Charities, consisting of Harvey W. Putnam and Drs. Stephen Smith and E. V. Stoddard, which strongly recommends the establishment of local sanitariums as the most efficient means of combating the spread of tuberculosis. The argument advanced by the committee is somewhat as follows: Fresh, pure air is now declared to be the remedy for consumption. The question to determine is, how can the fresh air treatment be most effectually and eco-

nomically made available? No one familiar with the peculiar habits of those who believe themselves to be the victims of tuberculosis can doubt the absolute necessity of placing them under rigid medical supervision. Under the discipline of the hospital or sanitarium, they can be compelled to conform to a prescribed method of living, and hence these institutions are essential to the treatment of consumptive patients of the laboring class. By the multiplication of these institutions, so that every consumptive would either undergo treatment in a special hospital or in his house, the disease could not spread among the people, and would eventually be exterminated. We are no longer compelled to seek health resorts for consumptives in remote mountain districts. On the contrary, it is possible to find in or near every community locations which, with the addition of hygienic conditions that may be supplied, will prove suitable for the full development of the fresh air treatment. The report concludes by expressing the conviction that if the Legislature should enact a law on the general plan outlined, it would at once lead to the establishment of local hospitals near all the great centres of population, the beneficent results of which would stimulate the people of smaller communities to the creation of their own sanitaria.

THE WAR IN SOUTH AFRICA.[1]

The Battle of Tugela (Colenso).

Frederick Treves, F.R.C.S., consulting surgeon with the British forces, sends the following graphic statement to the *British Medical Journal:*

It was from Frere Camp that the army under General Buller started for the Tugela River. Frere is merely a station on the line of rail which traverses Natal, and as it consists only of some four houses, it can hardly be dignified by the name of hamlet. These few single-story houses had been thoroughly looted by the Boers, and in one of them — the station master's house — the General had his headquarters. Frere is simply a speck — a corrugated iron oasis — in the vast undulating plains of the veld. On the way to Ladysmith are a few large kopjes, from any one of which the line of the Tugela River can be seen, with the hills beyond occupied by the Boer entrenchments, and over them again the hills which dominate Ladysmith. There was no shade of any kind, and as the weather was exceptionally hot the camp was not precisely comfortable. The inconvenience of a continued sun-glare was intensified by constant clouds of brown dust and by the scarcity of water. On the other hand, the evenings were cool and the early mornings delightful.

The river which is reputed to "run" through Frere had long since ceased to run. The water was retained by certain dams, and the pools thus formed were not over numerous. The water was the color of pea soup, and when in a glass was semi-opaque and of a faint brownish color. It soon blocked a Berkefeld filter, the pencil of which had to be cleaned after each water bottle had been pumped full. The filtered water was pleasant enough to the taste. In the lowest pool, immediately above the iron railway bridge which had been blown up by the Boers, Tommy Atkins could bathe in what seemed to be a light-colored mud. Here also he washed his socks and his shirts.

[1] Abstract from advance sheet, British Medical Journal.

We came up to Frere — I, and my two nurses — with No. 4 Stationary Field Hospital. We reached the camp on the Monday before the battle, when it was reputed that 30,000 men were under canvas. A camp of this size of necessity presented an endless scene of bustle and movement. Nothing seemed to be at rest but the interminable array of white tents and the rows of baggage wagons. Cavalry would be moving in one direction and infantry in another. Here a mounted patrol would be riding out or a couple of scouts coming in. Gallopers would be seen in all directions, and everywhere would be a struggling team of oxen or of mules enveloped in clouds of dust and urged on by sweating men and strange oaths. The camp, during the day, lay dry, dusty, parched and restless under a blazing sun, but at night there was a cool wind and cheery camp fires, and a darkness which blotted out the dusty roads, the dried up river, the dismal piles of stores, and the general picture of a camp in a desert of baked earth. Every night a search light was at work sending despatches to Ladysmith, and almost every morning could be heard the Boer guns thundering over that unhappy place. Tommy Atkins looked very smart in his khaki suit when leaving Waterloo Station, or when embarking at Southampton, but at Frere he showed the effects of wear, and his tunic, his belt, his pouches, his boots and his face had all toned down to one uniform tint of dirt color. He was of the earth earthy. Even his brown face and red neck were well powdered with the common dust, but nothing seemed to have blotted out his cheerfulness and his determinination to make the best of even a camp on the veld.

BEFORE THE BATTLE.

On Wednesday the army began to move forward to Chieveley, and on Thursday the whole camp had nearly vanished and little remained but smouldering fires of camp refuse, the inevitable dust, the inevitable sun and the inevitable Kaffir.

From a kopje some three miles beyond there — the kopje from which the Boers fired upon the ill-fated armored train — the new camp at Chieveley could be seen. The baggage train which followed the army was eight miles in length. This train was made up mainly of wagons drawn by teams of oxen — 18 to each wagon. The last bearer company was well out of sight in the new camp before the last wagons — carrying pontoons — had started. The course of this enormous caravan across the veld was marked by a line of brown dust which gave one the idea that the very road was smoking under this unwonted burden.

From the kopje we could see the firing of the great naval guns and the clouds of dust sent up by the exploding shells, and now and then from the weary road would come an attenuated sound, which was all that reached us of the shrill yells of the nigger drivers, whose dust-dried throats gave out noises like the shrieks of parrots.

On Friday morning No. 4 Stationary Hospital moved hurriedly to Chieveley. To our numbers had been added two Netley sisters, whose skill, devotion and unselfishness were soon taxed to the utmost. On the way up it was evident that the battle was raging. The roar of the big guns was incessant, and rising above their solemn boom was the sharp, irritable crack of the quick-firing ordnance. Our hospital was about three and three-quarters miles from the Naval Hill on

which our big guns were pitched. Close behind the ridge formed by this hill were four field hospitals. The scene presented at this spot was beyond description. The men were coming in as fast as the ambulances and bearers could bring them. Some were dead, some were dying, all were parched with thirst and baked and blistered with heat. The men were lying on all sides on stretchers — amidst tents, piles of rifles, accoutrements, battered helmets and blood-stained tunics. It was a sight no one would wish to see again, and the blazing sun added to the miseries of all.

Some 800 wounded were passed through the field hospitals and dealt with by 16 surgeons. Those who harshly criticise the Army Medical Department should have seen the work done on that memorable Friday on the Naval Hill before Colenso. No work could have been done better. The equipment was good, the arrangements elaborated, and the officers worked on hour after hour without rest or food under the most trying possible conditions. No greater strain could have fallen upon a department and all concerned met the brunt of it valiantly and well. One could not be other than proud of one's profession.

In addition to the ordinary bearer companies, Colonel Gallwey had organized a volunteer ambulance corps of some 2,000 men, disposed in the proportion of 12 men to a stretcher. It was intended that these bearers should convey the more seriously wounded from the field, so that they might be spared the jolting of the ambulance wagons over the somewhat rough ground. Not only did the bearers do this and so save infinite suffering, but all Friday night and Saturday they were carrying the graver cases from the field hospitals to the stationary hospital at Chieveley. So admirably was the stretcher work done that not a single wounded man was left upon the field after dark on Friday.

Our hospital at Chieveley was crammed to its utmost, and very many wounded men had to lie all night in the open. Fortunately the nights on Friday and Saturday were very fine, and there was a bright moon.

The work on Friday and Saturday was the heaviest I have ever experienced, and we all suffered a good deal from thirst. The nurses worked not only all day, but also all night. Some hundreds of wounded soldiers will have reason to remember their devotion that day, and how well they succeeded in rendering a little more tolerable a state of misery which was horrible to contemplate.

After a heavy afternoon on the field I returned to Chieveley Field Hospital in the evening, but had hardly got in when a galloper arrived to ask me to see Lieutenant Roberts, who had just been brought back. I returned at once with a full equipment of instruments, and much regret that that valiant soldier was from the first quite beyond the reach of surgery. In addition to a penetrating wound of the abdomen, his forearm was shattered by a Mauser and his knee wounded by a shell. He was pulseless. I slept outside his tent that night, and saw him up to Chieveley on Saturday morning. He never rallied nor regained a pulse, and died on Saturday at midnight. Before he was brought in he had been lying for seven hours in the sun in a donga. He was attended to by Major Babtie, R.A.M.C., who rode into the donga through a hail of bullets, and whose horse was killed under him. Major Babtie kept by the many wounded men in the donga until the battle was over, and as he alone had water in his water bottle he doled out water to each man in a minim measure, one drachm to each.

On Sunday we had to leave Chieveley as the hospital was within reach of the Boer shells. We therefore retired to our previous "pitch" at Frere. The hospital tents at Chieveley were admirably situated, but the work was much hampered by want of water. The temperature on Friday and Saturday was up to 100° F. in the shade. On Monday the temperature rose to 104° F. in the shade. A clinical thermometer in a bag and under cover of a tent registered 104.5° F.

The method of dealing with the wounded in the Natal Field Force is as follows: The railway — a single line — is open as far as Chieveley, and on it are two admirably-equipped hospital trains in charge of the indefatigable and ever-obliging Major Brazier-Creagh, R.A.M.C. The hospital train was on the field before daybreak on Saturday morning, and was soon filled with wounded. Some few of these were landed at the No. 4 Stationary Field Hospital at Chieveley, the rest were taken on to Estcourt and Maritzburg. At both these towns, but especially at Maritzburg, there is very excellent hospital accommodation. The base hospital alone at Maritzburg can take in 1,100 patients, and, besides, there is the large military hospital at the College, Grey's Hospital, and the hospital for volunteers established at the Legislative Assembly.

From Maritzburg the patients are sent down to Durban by the hospital train, and are then conveyed to Cape Town by the hospital ship *Spartan*. From the careful examination I made of her when I boarded her at Durban, I should think she was the best equipped and best-managed hospital ship afloat.

Colonel Gallwey's organization has now been tested to the utmost, and has been proved to be efficient and admirable. The wounded placed upon the hospital train by the Naval Hill below Chieveley could have — as soon as they were placed in their berths — iced soda water and whiskey, iced milk, hot soup, or even champagne and seltzer.

The great majority of the wounds are by Mauser bullets, some few are due to fragments of shell, and a still less number to shrapnel. The Mauser bullet is a very merciful one, and in no instance have I met with a case in which the head of the bullet had been cut off, as had been asserted by some. The damage done by the Mauser depends mainly upon the range. At 1,500 to 2,000 yards it penetrated like a needle. At 500 yards or less it will smash a femur or a humerus to fragments. When a bone is fractured the bullet — if retained — is generally found to be much distorted or broken up into many fragments. The shell generally peels off the leaden core. As an instance of the fine hitting of the Mauser, I may mention a case (from the armored train) in which the bullet went through the middle phalanges of the ring and little fingers, making four small wounds which healed kindly and neatly. The two bones were fractured, but the man recovered with sound union and mobile joints. On the other hand, I have seen a fracture of the humerus in which the bone was broken into twenty-three small fragments. Many gunshot fractures of the thigh heal by first intention.

The point of entry of the Mauser is very small — often, as Tommy says, like a bugbite; it is not difficult to overlook. The point of exit is also often very small, but is more apt to be slit-like. The hole made

in the bowel by the Mauser is very small, and can be closed by from three to five Lembert sutures. Several penetrating wounds of the liver and kidney have been followed by no symptoms. One distinguished officer had a shrapnel bullet pass through his liver and kidney. He had little collapse, and beyond some temporary tympanites and hematuria he had no trouble of any kind.

In several instances the bullet has passed through the brain without causing marked symptoms, and perfect recovery has followed. For example, a bullet entered near the vertex, passed through the brain, hard palate and buccal cavity and escaped at the root of the neck on the opposite side. No discomfort followed except headache and some strabismus. Speaking generally, operations upon the skull for gunshot wound have done exceptionally well, and such operations have been numerous. I met with four cases of paraplegia on Saturday, the bullet having in each case apparently passed through the cord.

Amputations have been comparatively few. I have seen a Mauser go through the centre of the patella and out at the centre of the popliteal space, and lead to no trouble in the joint. Some cases are hard to understand; as, for example, one in which the bullet entered above the clavicle and came out on the inner side of the opposite thigh, there being no symptom except temporary shock.

The field dressing carried by each soldier answers its purpose admirably.

On all sides there is evidence that our soldiers behaved splendidly on the field; and I can say that when brought back wounded they were plucky, patient and uncomplaining. Their unselfishness was many times very marked.

Obituary.

FRANCIS CHARLES PLUNKETT, M.D.

DR. FRANCIS CHARLES PLUNKETT, whose death occurred November 29, 1899, was born in 1842 at Castlemere House, County Mayo, Ireland. At the age of fifteen years he passed the preliminary examination at the Royal College of Surgeons, Dublin, and graduated from there in 1863. In 1864 he came to America and offered his services in the Civil War and enlisted as assistant surgeon in the One Hundred and Eighty-Third Ohio Volunteers. He passed the examination for assistant surgeon, United States Army, but declined a commission. In 1866 he came to Lowell, where, as one of the local daily papers said, "Dr. Plunkett's life in Lowell was a worthy one." He early set himself to work building up his practice and soon became one of Lowell's foremost physicians.

He is survived by a widow, two daughters and one son, Mr. Harry Plunkett, a medical student.

Correspondence.

THE CASE METHOD OF TEACHING SYSTEMATIC MEDICINE.

PHILADELPHIA, PA., January 28, 1900.

MR. EDITOR: — The principles for which Mr. W. B. Cannon so ably contends in his article on "The Case Method of Teaching Systematic Medicine," have long been recognized, and so far as possible applied in the teaching of clinical surgery at the University of Pennsylvania. I have for years endeavored to make the students acquire for themselves in any given case the facts necessary for a diagnosis, carry out for themselves the reasoning process by which the diagnosis is reached and then defend their opinion and the treatment they recommend against my criticism or that of other teachers.

The usual limitations of clinical material have prevented this course from being as systematic or as comprehensive as I desired, and it had not occurred to me to use the histories of cases in the way suggested by Mr. Cannon. I am writing to express my obligations and to enclose copies of histories which were given yesterday to the students of the third and fourth year classes. I cordially agree with your editorial estimate of the probable usefulness of this plan.

Yours truly,

J. WILLIAM WHITE, M.D.

[The foregoing letter relative to Mr. W. B. Cannon's paper, published in our issue of January 11th, on "The Case Method of Studying Systematic Medicine," leads us to suspect that Dr. White has not clearly in mind the distinction which Mr. Cannon intends to draw between the conference and the case systems. The essential feature of the conference system as practised for many years at the Harvard Medical School is the careful study and report of an actual case by one student, the remainder of the class acting mainly as listeners, rather than as actual participants in the investigation. The advantages of such a method for the individual student are manifest, and, in fact, probably greater than any other as yet devised. For the body of the class, however, who have had no opportunity to see and examine the case under consideration, the discussion loses much of its significance and value. Mr. Cannon's scheme is devised to obviate or supplement this weakness of the conference system by substituting histories of cases which each student in the class may have an equal chance to study, and therefore to discuss with intelligence and interest. The essence of the plan is to throw open to all the students the advantages derived from a personal study of actual cases, rather than limit those advantages to the few. Inasmuch as the study of patients, by a large class, is impracticable for obvious reasons, the alternative of studying case histories presents itself; the demonstration of this possibility is due Mr. Cannon, as outlined in his paper, and in this idea, we are confident, lies an essentially new and very hopeful field for the development of medical teaching. We are glad to know that the plan is being tested in Philadelphia, as it has been, with success, in Boston.—ED.]

METEOROLOGICAL RECORD

For the week ending January 27th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		Weather. *		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S...21	29.80	37	52	22	79	55	67	N.W.	N.W.	30	15	O.	C.	.08
M..22	30.14	38	53	22	69	44	56	S.W.	S.W.	16	11	C.	C.	
T...23	29.87	46	56	35	65	53	59	S.W.	W.	16	15	C.	C.	
W..24	30.34	24	35	14	47	64	56	N.	E.	11	12	F.	O.	
T...25	29.74	30	37	24	81	96	88	N.W.	N.W.	9	6	O.	R.	.37
F...26	29.33	24	38	11	69	56	62	W.	W.	22	36	O.	N.	.05
S...27	30.02	20	28	11	45	47	46	W.	W.	27	16	C.	C.	
☞														.50

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☞ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JANUARY 27, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Typhoid fever.	Diphtheria and croup.	Measles.
New York	3,550,053	1281	422	24.00	24.16	.56	4.88	2.56
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	—	—	—	—	—	—	—
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	208	61	28.32	17.76	1.44	5.76	.48
Baltimore	506,389	225	72	18.92	22.00	1.76	3.96	.44
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	365,000	129	43	12.79	20.79	9.24	1.54	1.54
Washington	277,000	102	29	27.72	22.77	4.95	1.98	—
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	74	27	21.60	25.65	16.20	2.70	2.70
Nashville	87,754	24	3	29.12	12.48	—	—	4.16
Charleston	65,165	25	5	32.00	4.00	—	—	—
Worcester	111,732	38	17	26.31	5.26	5.26	5.26	—
Fall River	103,142	29	14	13.80	20.70	—	—	—
Cambridge	92,820	24	7	33.28	8.32	4.16	20.80	—
Lowell	90,114	36	10	24.93	24.93	—	5.54	—
New Bedford	70,511	13	3	15.38	15.38	—	—	—
Lynn	68 218	15	4	33.33	13.34	—	—	—
Somerville	64,394	16	5	12.50	18.75	—	6.25	—
Lawrence	59,072	22	11	16.60	12.45	—	—	—
Springfield	58,266	16	4	—	—	—	—	—
Holyoke	44,510	13	3	23.07	—	—	7.69	—
Brockton	38,759	13	7	—	—	—	—	—
Salem	37,723	13	7	—	—	—	—	—
Malden	36,421	11	6	—	36.36	—	—	—
Chelsea	34,235	15	2	6 66	—	—	—	—
Haverhill	32,651	7	2	14.28	14.28	—	—	—
Gloucester	31,426	2	—	50.00	—	—	—	—
Fitchburg	30,523	7	1	—	—	—	—	—
Newton	30,461	6	1	16.66	16.66	—	—	—
Taunton	28,527	12	3	8.33	16.66	—	—	—
Everett	28,102	7	—	21.42	—	—	—	—
Quincy	24,578	7	2	—	21.42	—	—	—
Pittsfield	23,441	8	1	12.50	—	—	—	—
Waltham	22,791	8	2	25.00	12.50	—	—	—
North Adams	21,583	9	3	22.22	22.22	11.11	—	—
Chicopee	18,316	3	2	—	33.33	—	—	—
Medford	17,190	2	1	50.00	—	—	50.00	—
Newburyport	15,636	4	1	—	—	—	—	—
Melrose	14,721	2	2	—	—	—	—	—

Deaths reported 2,438; under five years of age 785; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 550, acute lung diseases 517, diphtheria and croup 103, measles 41, typhoid fever 35, scarlet fever 26, diarrheal diseases 25, whooping-cough 18, erysipelas 9, cerebrospinal meningitis 9.

From diarrheal diseases New York and Baltimore 8 each, Pittsburg 4, Fall River 2, Washington, Providence and Nashville 1 each. From scarlet fever New York 16, Boston 4, Pittsburg, Worcester, New Bedford, Holyoke and Fitchburg 1 each. From whooping-cough New York 9, Boston, Baltimore, Washington, Providence, Charleston, Lawrence and North Adams 1 each. From erysipelas New York 6, Boston 2, Baltimore 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,236, for the week ending January 20th, the death-rate was 24.9. Deaths reported 5,552: acute diseases of the respiratory organs (London) 728, measles 121, whooping-cough 115, diphtheria 96, fever 39, scarlet fever 35, diarrhea 35, small-pox (Liverpool and Hull 1 each) 2.

The death-rates ranged from 11.2 in Oldham to 32.2 in Nottingham: Birmingham 27.9, Bradford 26.3, Cardiff 14.5, Gateshead 19.5, Hull 27.5, Leeds 20.6, Liverpool 32.0, Manchester 22.2, Newcastle-on-Tyne 25.6, Portsmouth 19.8, Sheffield 26.2, Swansea 18.3.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING FEBRUARY 3, 1900.

H. E. AMES, surgeon, detached from duty in connection with the "Kearsarge" and ordered to duty on board that vessel February 20th.

J. C. BOYD, medical inspector, commissioned as medical inspector from October 25, 1899.

R. WAGGENER, pharmacist, detached from the "Pensacola" Navy Yard and ordered to be examined at the Washington Navy Yard, February 13th, for retirement, and then home to wait orders.

(CHANGE BY CABLE FROM ASIATIC STATION.)

J. J. SNYDER, assistant surgeon, detached from the "New Orleans" and ordered to the "Isla de Cuba."

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING FEBRUARY 1, 1900.

WERTENBAKER, C. P., passed assistant surgeon. To proceed to Winston, N. C., for special temporary duty. January 29, 1900. To proceed to High Point, N. C., for special temporary duty. January 31, 1900.

NYDEGGER, J. A., passed assistant surgeon. To proceed to Manila, P. I., and report to Passed Assistant Surgeon J. C. PERRY for duty. February 1, 1900.

TABB, S. R., assistant surgeon. Granted extension of leave of absence for seven days on account of sickness. January 27, 1900.

GRUBBS, S. B., assistant surgeon. To proceed to Marseilles, France, for temporary duty. January 31, 1900.

KAUFFMANN, H. B., acting assistant surgeon. Granted leave of absence for thirty days on account of sickness, from February 3, 1900. February 1, 1900.

RECENT DEATHS.

AUSTIN MARSH, M.D., M.M.S S., died February 2d, at Carlisle, Mass. He had been a member of the Society since 1839.

A. P. RICHARDSON, M.D., a prominent physician and contributor to the JOURNAL, died at his home in Walpole, N. H., February 3d. He had practised in Walpole for thirty-four years. He was sixty-five years of age, was a graduate of the University of Vermont and was formerly president of the New Hampshire Medical Society.

ERNEST G. METCALFE, M.D., of Brooklyn, N. Y., died February 2d, from Bright's disease, at the age of forty-nine. Dr. Metcalfe was a Civil Service Commissioner from 1886 to 1888, and for four years was an examiner in lunacy for the Department of Charities.

SIR THOMAS GRAINGER STEWART died in Edinburgh, February 3d, at the age of sixty-three. He was educated at the high school and University of Edinburgh, and subsequently studied in the universities and hospitals of Berlin, Prague and Vienna. On his return to Edinburgh he became resident physician in the Royal Infirmary. In 1876 he was appointed professor of the practice of physics at the University of Edinburgh. He was an honorary Fellow of the Royal College of Physicians of Ireland, and of the College of Physicians, Philadelphia, an M.D. of the Royal University and received the like honor from the University of Dublin on the occasion of the tercentenary of Trinity College. From the University of Aberdeen he received the degree of Doctor of Laws. He was at various times president of the Royal College of Physicians and of the Medico-Chirurgical Society of Edinburgh, and of the Section in Medicine of the British Medical Association, and was one of the honorary presidents of the Berlin International Congress. He presided over the meeting of the British Medical Association in August, 1896. In 1892 he was appointed physician in ordinary to the queen in Scotland. He received the honor of knighthood in 1894. He was representative of England at the International Congress on Tuberculosis, which met at Berlin in May of last year, and took an active part in the discussions.

BOOKS AND PAMPHLETS RECEIVED.

Transactions of the American Ophthalmological Society, Thirty-fifth Annual Meeting, New London, 1899. Hartford. 1899.

The International Medical Annual Synoptical Index to Remedies and Diseases for the Twelve Years 1887-1899. New York and Chicago: E. B. Treat & Co. 1900.

Chirurgie du Foie et des Voies Biliares. Par J. Pantaloni (de Marseilles). Avec 348 figures dans le texte. Paris: Institut de Bibliographie Scientifique. 1899.

Transactions of the Association of American Physicians, Fourteenth Session, held at Washington, D. C., May 2, 3 and 4, 1899. Volume XIV. Philadelphia: Printed for the Association. 1899.

Specielle Pathologie und Therapie, Nothnagel. XIX Band, II Thiel, III Heft. Die Krankheiten der Prostata. Von Dr. A. Von Frisch, a. ö. Professor der Chirurgie in Wien. Wien: Alfred Hölder. 1899.

King's College Hospital Report: being the Annual Report of King's College Hospital and the Medical Department of King's College. Edited by Nestor Tirard, M.D., F.R.C.P., W. Watson Cheyne, F.R.C.S., F.R.S., John Phillips, M.A., M.D., F.R.C.P., W. D. Halliburton, M.D., F.R.S. Vol. IV. Vol. V. (October 1, 1897, to September 30, 1898). London: Printed by Adlard & Son. 1899.

Original Articles.

A SYSTEM OF CLINICAL INSTRUCTION.—FOR THE SIMULTANEOUS INSTRUCTION IN SMALL SECTIONS OF A LARGE NUMBER OF STUDENTS.

BY A. H. WENTWORTH, M.D., BOSTON,

Assistant in Diseases of Children in the Harvard Medical School; Assistant Physician to the Children's Hospital; Senior Assistant Physician to the Infants' Hospital.

THE purpose of the paper is to show that large numbers of students can be given clinical instruction in small sections on the same day. A plan for the introduction of this method into the third year course of study in the Harvard Medical School required a few alterations to be made in the present system of instruction for that year, in order to obtain the requisite time. These changes must not be construed into an attempt on my part to revise the course of instruction for the third year. My object is simply to demonstrate the practicability of section teaching.

Some of the faults in the present method of teaching clinical subjects are that the student hears a great deal but does very little himself; that he is not made to think for himself; that he is not made to express and to commit himself before others, and that he is not given opportunities to make mistakes and to have them corrected. He, therefore, fails to learn systematic and accurate methods of examination; his deductions are very faulty and he acquires but little self-reliance.

Not that I would advocate abandoning lectures and large clinics. I believe that they are essential in order to complete the students' knowledge. I would merely give fewer lectures on clinical subjects and make the greater part of the work practical by teaching the students in small sections at the bedside, and in out-patient departments. The present system of making ward visits is only partially successful in this respect, because the sections are too large to enable the students to examine the patients individually. In most cases the instructor calls attention to the abnormalities, and permits as many students as possible to examine very superficially what he has pointed out to them. In some cases one or more students are assigned to a patient while the remaining students are making the rounds with the instructor. These students have an opportunity to think for themselves and to thoroughly examine the patient. The obvious fault here is that only a limited number of students have such opportunities, and in the course of a year's instruction even these fortunate ones have examined but a limited number of patients. The fundamental principle of all instruction should be that all of the students should have *equal* opportunities, otherwise the system is manifestly unfair. A certain amount of section work is laid out for the students by the present system, but each section rarely goes more than six times in the course of the year. This is just enough to show the student how desirable it would be if he could only have more of it.

For several years I have employed the method which I am about to describe in teaching sections consisting of nine students in a section.

Three students are assigned to each patient. They are allowed three-quarters of an hour in which to make their examinations. The histories of the cases are withheld until the instructor goes over the cases. The students are permitted to ask the patients only such questions as relate to the physical examination. The object of this is to prevent the students from forming hasty conclusions about the cases, and thus to force them to make systematic and thorough examinations of the patients.

The students are informed beforehand that all that is required of them is to make accurate physical examinations of the patients with reference to their general condition and the condition of the various organs. If they are able to make diagnoses from the results of their examinations, so much the better. After a little practice they almost always make provisional diagnoses and have prepared a series of intelligent questions about the history and the results of the examination of urine, blood, etc., which will help them to decide. This is a good drill and teaches them careful observation and system.

At the end of the allotted time, the instructor asks them various questions about the normal organs as well as about the abnormal ones, in order to be sure that they have neglected nothing. They are expected after a few exercises to be able to tell the instructor everything that is abnormal about the case without his asking them a question.

When they have finished the description the instructor goes over the case himself and corrects or verifies their observations. The remaining six students are then permitted to examine any abnormalities which may be present.

The discussion of the case is then taken up. Deductions are made from what has been found. The students' diagnoses are criticised. Differential diagnosis is carefully considered. The students are questioned about the diseases which ought to be considered and how some of these diseases can be ruled out. This part of the exercise is of the greatest value, because it not only makes the students think for themselves, but they are forced to express their opinions before the other students. It teaches them to express themselves clearly, and to arrange their confused ideas. The remaining students are appealed to, to suggest anything which has not been considered. In this way, they all take part, and when the "quiz" on one case is completed, the instructor rapidly considers the etiology, symptoms, complications, prognosis and treatment of the disease which has been diagnosticated. There is usually not much time left for this, so that this part of the instruction must be concise and to the point if the instructor hopes to complete the three cases.

The value of this system becomes apparent in a very few exercises. The students become *thinkers;* they become self-reliant; they are obliged to do their own work. They are criticised *freely* and impartially but never ridiculed, and they take pleasure in it because they note the improvement from day to day. It frequently happens that the trained observer's deductions appear so simple and evident that the students are convinced that they had the same thing in mind. It is necessary only to compel them to make the deductions themselves to show them that they erred in supposing they could make these deductions without careful thought and training. They learn more through their mistakes than in any other way.

Two hours is the shortest time, in my opinion, that such a course can be given in. Three-quarters of an

hour for the students and the remainder for the instructor. Even then the time will be found to be very short, because the students require time in which to express themselves, and much time is needed to allow the students to examine abnormalities individually. The students become so interested in examining the cases and in taking part in the discussion that I have not found them to be dissatisfied with the length of the exercise.

The problem in teaching large classes in small sections is to permit each student to examine as many patients as possible in the course of a year. If the sections are small and the class is large there will be fewer opportunities for each student unless the number of instructors is very large. If the sections are too large it will be found that two hours will not suffice for the instructor to go over the cases. If too many men are put upon one case they interfere with each others' examinations in the allotted time of three-quarters of a hour. It has been found by experience that three men on a case get along very well. Two of them can make some of the examination at the same time, and after one or two exercises they keep the run of the time and are careful not to allow one man to monopolize more than his share. Twelve men in a section with three cases cannot be handled so well in two hours, because four men on a case cannot examine thoroughly in three-quarters of an hour. If four cases are given out there is not sufficient time for the students to examine the other cases and for the instructor to discuss them. If two men are assigned to a case in sections of six students it would require more instructors and more patients to enable a large class to be taught at the same time.

In order to obtain the best results the teaching should be uniform. All the instructors should be required to conduct their exercise in the same way. The students should be made to think and to do their own work, and the instructors should correct the students' observations. At first sight this may appear to be a very elementary way in which to teach, and likely to prove objectionable to the instructors on the ground that it hampers their capabilities as teachers by its limitations. I can assure any one who has not tried this method that he will find unlimited opportunities for the display of his talents as a teacher in the discussion of the case and in his subsequent summary of it.

I have chosen 144 for the total number of students, because the classes in the Harvard Medical School have not exceeded that number. But by the method which I am about to describe, the number of sections is limited only by the number of available instructors and by the number of patients which can be utilized. In order to ensure impartial instruction and to avoid dissatisfaction among the students it is essential that a system of rotation should be adopted by means of which the instructors teach each section in turn, so that at the end of a given number of exercises the entire class shall have been taught by each instructor. Furthermore, it is important to give more clinical instruction in some branches of medicine than in others. In my scheme I have assigned 50 per cent. of the clinical instruction to clinical medicine, 25 per cent. to clinical surgery, and the remaining 25 per cent. to pediatrics, clinical pathology and contagious diseases.

In the plan which was submitted to the Committee on Education in the Harvard Medical School, section teaching was arranged for four times a week. This was a provisional arrangement owing to the number of available teachers. It would be an improvement to give section teaching six times a week. The time required for each exercise is two hours, but the hospitals in Boston are some distance apart and it was necessary to allow an additional hour for some of the sections to cross the city (Table I). The hours from 10 A. M. to 1 P. M. were selected for this purpose. The tabular view of the arrangement will make this clear. The sections which have to cross the city will begin their exercise an hour later.

The entire class is divided into sections consisting of nine students in a section. If the number of students does not permit an equal division into sections of nine men, one or two of the sections can consist of six students. The sections are numbered, and the students in each section retain the same numbers throughout the year. The assignment of students to sections can be made a day or two before the beginning of the fall term. The names can be bulletined, and if desirable a day or two can be allowed for some of the students to exchange into other sections.

TABLE I.

TABULAR VIEW FOR THIRD YEAR REVISED TO ALLOW SECTION TEACHING ON FOUR DAYS IN THE WEEK.

Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9. Clinical Medicine. (M. G. H.)	Clinical Medicine. (B. C. H.)	Clinical Medicine. (M. G. H.)	Theory and Practice. (M. G. H.)	Clinical Surgery. (B. C. H.)	Clinical Medicine. (B. C. H.)
10. Surgery. (M. G. H.)	Clinical Surgery. (B. C. H.)	Section teaching from 10 to 12, or from 11 to 1, for those sections which have to cross the city to other hospitals (see tabular view of section teaching).			
11. Theory and Practice. (M. G. H.)					
11½.	Pediatrics. (Med. School.)				
12. Surgical Conference. (M. G. H.)					
3. Obstetrics. Lecture. (Med. School.)	Theory and Practice. Lecture. (Med. School.)	Obstetrics. Conference. (Med. School.)	Obstetrics. Lecture. (Med. School.)	Theory and Practice. Lecture. (Med. School.)	
4. Surgery. Lecture. (Med. School.)	Obstetrics. Recitation. (Med. School.)	Pediatrics. Lecture or recitation. (Med. School.)	Surgery. Lecture. (Med. School.)		

If it were considered preferable to continue to teach dermatology and neurology in the third year instead of in the fourth year, arrangements could be made for one lecture to be given in each of these subjects every week and for one section to be assigned to an instructor in each of these departments to receive section teaching.

TABLE II.

	Wednesday, Nov. 1st.	Thursday, Nov. 2d.	Friday, Nov. 3d.	Saturday, Nov. 4th.	Wednesday, Nov. 8th.	Thursday, Nov. 9th.	Friday, Nov. 10th.	Saturday, Nov. 11th.	Wednesday, Nov. 15th.	Thursday, Nov. 16th.	Friday, Nov. 17th.	Saturday, Nov. 18th.	Wednesday, Nov. 22d.	Thursday, Nov. 23d.	Friday, Nov. 24th.	Saturday, Nov. 25th.	Wednesday, Nov. 29th.	Thursday, Nov. 30th.
Contagious.	No. 1. B. C. H.	No. 2. B. C. H.	No. 3. B. C. H.	No. 4. B. C. H.	No. 5. B. C. H.	No. 6. B. C. H.	No. 7. B. C. H.	No. 8. B. C. H.	No. 9. B. C. H.	No. 10. B. C. H.	No. 11. B. C. H.	No. 12. B. C. H.	No. 13. B. C. H.	No. 14. B. C. H.	No. 15. B. C. H.	No. 16. B. C. H.	No. 1. B. C. H.	No. 2. B. C. H.
Clinical Medicine.	No. 2. Ward. B. C. H.	No. 3. Ward. B. C. H.	No. 4. Ward. B. C. H.	No. 5. Ward. B. C. H.	No. 6. Ward. B. C. H.	No. 7. Ward. B. C. H.	No. 8. Ward. B. C. H.	No. 9. Ward. B. C. H.	No. 10. Ward. B. C. H.	No. 11. Ward. B. C. H.	No. 12. Ward. B. C. H.	No. 13. Ward. B. C. H.	No. 14. Ward. B. C. H.	No. 15. Ward. B. C. H.	No. 16. Ward. B. C. H.	No. 1. Ward. B. C. H.		
Clinical Surgery.	No. 3. Ward. B. C. H.	No. 4. Ward. B. C. H.	No. 5. Ward. B. C. H.	No. 6. Ward. B. C. H.	No. 7. Ward. B. C. H.	No. 8. Ward. B. C. H.	No. 9. Ward. B. C. H.	No. 10. Ward. B. C. H.	No. 11. Ward. B. C. H.	No. 12. Ward. B. C. H.	No. 13. Ward. B. C. H.	No. 14. Ward. B. C. H.	No. 15. Ward. B. C. H.	No. 16. Ward. B. C. H.	No. 1. Ward. B. C. H.	No. 2. Ward. B. C. H.		
Clinical Medicine.	No. 4. Ward. B. C. H.	No. 5. Out Pat. B. C. H.	No. 6. Ward. B. C. H.	No. 7. Out Pat. B. C. H.	No. 8. Ward. B. C. H.	No. 9. Out Pat. B. C. H.	No. 10. Ward. B. C. H.	No. 11. Out Pat. B. C. H.	No. 12. Ward. B. C. H.	No. 13. Out Pat. B. C. H.	No. 14. Ward. B. C. H.	No. 15. Out Pat. B. C. H.	No. 16. Ward. B. C. H.	No. 1. Out Pat. B. C. H.	No. 2. Ward. B. C. H.	No. 3. Out Pat. B. C. H.		
Clinical Pathology and Pediatrics.	No. 5. Laby. M. G. H.	No. 6. Ward. C. H.	No. 7. Laby. M. G. H.	No. 8. Ward. C. H.	No. 9. Laby. M. G. H.	No. 10. Ward. C. H.	No. 11. Laby. M. G. H.	No. 12. Ward. C. H.	No. 13. Laby. M. G. H.	No. 14. Ward. C. H.	No. 15. Laby. M. G. H.	No. 16. Ward. C. H.	No. 1. Laby. M. G. H.	No. 2. Ward. C. H.	No. 3. Laby. M. G. H.	No. 4. Ward. C. H.	No. 5. Ward. C. H.	No. 6. Laby. M. G. H.
Clinical Medicine.	No. 6. Ward. B. C. H.	No. 7. Out Pat. B. C. H.	No. 8. Ward. B. C. H.	No. 9. Out Pat. B. C. H.	No. 10. Ward. B. C. H.	No. 11. Out Pat. B. C. H.	No. 12. Ward. B. C. H.	No. 13. Out Pat. B. C. H.	No. 14. Ward. B. C. H.	No. 15. Out Pat. B. C. H.	No. 16. Ward. B. C. H.	No. 1. Out Pat. B. C. H.	No. 2. Ward. B. C. H.	No. 3. Out Pat. B. C. H.	No. 4. Ward. B. C. H.	No. 5. Out Pat. B. C. H.		
Clinical Surgery.	No. 7. Out Pat. B. C. H.	No. 8. Out Pat. B. C. H.	No. 9. Out Pat. B. C. H.	No. 10. Out Pat. B. C. H.	No. 11. Out Pat. B. C. H.	No. 12. Out Pat. B. C. H.	No. 13. Out Pat. B. C. H.	No. 14. Out Pat. B. C. H.	No. 15. Out Pat. B. C. H.	No. 16. Out Pat. B. C. H.	No. 1. Out Pat. B. C. H.	No. 2. Out Pat. B. C. H.	No. 3. Out Pat. B. C. H.	No. 4. Out Pat. B. C. H.	No. 5. Out Pat. B. C. H.	No. 6. Out Pat. B. C. H.		
Clinical Medicine.	No. 8. Ward. B. C. H.	No. 9. Ward. B. C. H.	No. 10. Ward. B. C. H.	No. 11. Ward. B. C. H.	No. 12. Ward. B. C. H.	No. 13. Ward. B. C. H.	No. 14. Ward. B. C. H.	No. 15. Ward. B. C. H.	No. 16. Ward. B. C. H.	No. 1. Ward. B. C. H.	No. 2. Ward. B. C. H.	No. 3. Ward. B. C. H.	No. 4. Ward. B. C. H.	No. 5. Ward. B. C. H.	No. 6. Ward. B. C. H.	No. 7. Ward. B. C. H.		
Clinical Pathology and Pediatrics.	No. 9. Laby. B. C. H.	No. 10. Ward. C. H.	No. 11. Laby. B. C. H.	No. 12. Ward. C. H.	No. 13. Laby. B. C. H.	No. 14. Ward. C. H.	No. 15. Laby. B. C. H.	No. 16. Ward. C. H.	No. 1. Laby. B. C. H.	No. 2. Ward. C. H.	No. 3. Laby. B. C. H.	No. 4. Ward. C. H.	No. 5. Laby. B. C. H.	No. 6. Ward. C. H.	No. 7. Laby. B. C. H.	No. 8. Ward. C. H.	No. 9. Ward. C. H.	No. 10. Laby. B. C. H.
Clinical Medicine.	No. 10. Ward. B. C. H.	No. 11. Ward. B. C. H.	No. 12. Ward. B. C. H.	No. 13. Ward. B. C. H.	No. 14. Ward. B. C. H.	No. 15. Ward. B. C. H.	No. 16. Ward. B. C. H.	No. 1. Ward. B. C. H.	No. 2. Ward. B. C. H.	No. 3. Ward. B. C. H.	No. 4. Ward. B. C. H.	No. 5. Ward. B. C. H.	No. 6. Ward. B. C. H.	No. 7. Ward. B. C. H.	No. 8. Ward. B. C. H.	No. 9. Ward. B. C. H.		
Clinical Surgery.	No. 11. Ward. M. G. H.	No. 12. Ward. M. G. H.	No. 13. Ward. B. C. H.	No. 14. Ward. M. G. H.	No. 15. Ward. M. G. H.	No. 16. Ward. M. G. H.	No. 1. Ward. M. G. H.	No. 2. Ward. M. G. H.	No. 3. Ward. M. G. H.	No. 4. Ward. M. G. H.	No. 5. Ward. M. G. H.	No. 6. Ward. M. G. H.	No. 7. Ward. M. G. H.	No. 8. Ward. M. G. H.	No. 9. Ward. M. G. H.	No. 10. Ward. M. G. H.		
Clinical Medicine.	No. 12. Ward. M. G. H.	No. 13. Ward. M. G. H.	No. 14. Ward. M. G. H.	No. 15. Ward. M. G. H.	No. 16. Ward. M. G. H.	No. 1. Ward. M. G. H.	No. 2. Ward. M. G. H.	No. 3. Ward. M. G. H.	No. 4. Ward. M. G. H.	No. 5. Ward. M. G. H.	No. 6. Ward. M. G. H.	No. 7. Ward. M. G. H.	No. 8. Ward. M. G. H.	No. 9. Ward. M. G. H.	No. 10. Ward. M. G. H.	No. 11. Ward. M. G. H.		
Clinical Pathology and Pediatrics.	No. 13. Laby. B. C. H.	No. 14. Out Pat. C. H.	No. 15. Laby. M. G. H.	No. 16. Out Pat. C. H.	No. 1. Laby. B. C. H.	No. 2. Out Pat. C. H.	No. 3. Laby. B. C. H.	No. 4. Out Pat. C. H.	No. 5. Laby. B. C. H.	No. 6. Out Pat. C. H.	No. 7. Laby. B. C. H.	No. 8. Out Pat. C. H.	No. 9. Laby. B. C. H.	No. 10. Out Pat. C. H.	No. 11. Laby. B. C. H.	No. 12. Out Pat. C. H.	No. 13. Out Pat. C. H.	No. 14. Laby. B. C. H.
Clinical Medicine.	No. 14. Ward. M. G. H.	No. 15. Ward. M. G. H.	No. 16. Ward. M. G. H.	No. 1. Ward. M. G. H.	No. 2. Ward. M. G. H.	No. 3. Ward. M. G. H.	No. 4. Ward. M. G. H.	No. 5. Ward. M. G. H.	No. 6. Ward. M. G. H.	No. 7. Ward. M. G. H.	No. 8. Ward. M. G. H.	No. 9. Ward. M. G. H.	No. 10. Ward. M. G. H.	No. 11. Ward. M. G. H.	No. 12. Ward. M. G. H.	No. 13. Ward. M. G. H.		
Clinical Surgery.	No. 15. Out Pat. M. G. H.	No. 16. Out Pat. M. G. H.	No. 1. Out Pat. M. G. H.	No. 2. Out Pat. M. G. H.	No. 3. Out Pat. M. G. H.	No. 4. Out Pat. M. G. H.	No. 5. Out Pat. M. G. H.	No. 6. Out Pat. M. G. H.	No. 7. Out Pat. M. G. H.	No. 8. Out Pat. M. G. H.	No. 9. Out Pat. M. G. H.	No. 10. Out Pat. M. G. H.	No. 11. Out Pat. M. G. H.	No. 12. Out Pat. M. G. H.	No. 13. Out Pat. M. G. H.	No. 14. Out Pat. M. G. H.		
Clinical Medicine.	No. 15. Out Pat. M. G. H.	No. 1. Out Pat. M. G. H.	No. 2. Out Pat. M. G. H.	No. 3. Out Pat. M. G. H.	No. 4. Out Pat. M. G. H.	No. 5. Out Pat. M. G. H.	No. 6. Out Pat. M. G. H.	No. 7. Out Pat. M. G. H.	No. 8. Out Pat. M. G. H.	No. 9. Out Pat. M. G. H.	No. 10. Out Pat. M. G. H.	No. 11. Out Pat. M. G. H.	No. 12. Out Pat. M. G. H.	No. 13. Out Pat. M. G. H.	No. 14. Out Pat. M. G. H.	No. 15. Out Pat. M. G. H.		

Abbreviations. — B. C. H. = Boston City Hospital; M. G. H. = Massachusetts General Hospital; C. H. = Children's Hospital.

At the end of 16 exercises the rotation is complete and Section No. 1 has returned to its first instructor.

Clinical pathology and pediatrics alternate with each other. During the *first* rotation of 16 exercises the odd numbers are assigned to clinical pathology and the even numbers to pediatrics. During the *second* rotation the odd numbers are assigned to pediatrics and the even numbers to clinical pathology. This must be remembered in preparing a tabular view for the entire year.

By this arrangement each section has two exercises in clinical medicine; one exercise in clinical surgery; one exercise in clinical pathology, *or* pediatrics, *each week*, and one exercise in contagious diseases every *fourth* week.

In an average school year of 32 weeks *each student* will have examined 192 medical cases, 96 surgical cases, and 48 children.

A tabular view of the section work for the ensuing year can be printed at any time before the school year begins and distributed among the students after they have received their section numbers. In this way all confusion will be avoided and the students will present themselves at the various hospitals at the hours assigned, without further notice. The absence of one or more students from a section will not interfere with the instruction of the remaining students.

By adopting a system of rotation each section meets a different instructor each time until the rotation has been completed and Section No. 1 has returned to its first instructor. In arranging such a system it is necessary so to arrange the instruction that at the end of rotation each section shall have had the same number of exercises in each subject. This may be accomplished by arranging the subjects in such a way that the same subject shall not be assigned to more than one section in succession, that is, two sections should not be taught clinical medicine in succession. If this arrangement is not adhered to, it will be found at the end of several exercises that one section will have had more instruction in surgery, and another, more in clinical medicine, etc. A study of Table II will explain this.

To avoid interfering with the rotation and at the same time to give less instruction in clinical pathology and in pediatrics, these two subjects are arranged to alternate with each other. It will be seen that during the *first* rotation the odd numbers are assigned to clinical pathology and the even numbers to pediatrics. To enable the sections that had pediatrics to have clinical pathology and *vice versa*, it is necessary in the *next rotation* to assign the even numbers to clinical pathology and the odd numbers to pediatrics. This alternation must be arranged in the tabular view. After receiving their section numbers at the beginning of the term, the students have only to consult the tabular view to find out which hospital to go to and what the exercise will be on any day in the school year.

There is one important objection to the method of teaching, namely, the number of instructors that are needed. This objection applies chiefly to clinical medicine. If the method were adopted in the Harvard Medical School, *without any alteration* in Table II, it would require eight additional assistants in clinical medicine, because the time of the present instructors is fully occupied in teaching auscultation and percussion. It should be borne in mind that the apportionment of sections can be altered to any extent. Two of the sections assigned to clinical medicine could receive instruction in neurology, a third and fourth section could be assigned to dermatology and to pediatrics respectively. By this arrangement only four additional instructors would be needed in clinical medicine. As a preliminary arrangement for the first year or two, the number of exercises could be reduced to two or three times a week instead of four times.

The purpose of this paper, as I stated at first, is to show the practicability of section teaching, but I should like to add a few words about didactic lectures and to offer a few suggestions about conducting a course in section teaching. I believe that didactic lectures are needed by the students to supplement section teaching. Most of the time at a clinical exercise should be spent in correcting errors in observation and in deduction and in permitting the students to examine the abnormalities which have been detected. The time which remains, if this be done thoroughly, will be found to be so short that the instructor will be forced to omit much useful information about the disease under discussion, information that is often of the greatest value in the management and treatment of cases in practice and much that is essential in order to obtain a clear conception of the nature of the disease. To obtain such information from text-books alone is usually beyond the powers of the student because his reading-time is very limited and because he lacks the experience which is necessary to enable him to separate the essential from the non-essential.

SUGGESTIONS.

(1) The section teaching should be under the control of the professor. This would not require a great expenditure of time if the clerical details were performed for him by an assistant or by a secretary.

(2) A list of the diseases which the professor wished to have shown to the students could be prepared, and the instructors could arrange to show these diseases during the year.

(3) The instructors could keep a record of the diseases which had been shown and the sections that had seen them. These reports could be sent to the professor every week and would enable him to arrange the teaching so that all of the students could see the same diseases in the course of the year.

(4) An effort should be made to show the students different stages and complications of the same disease.

(5) The professor could arrange a series of lectures to supplement the section teaching. These lectures would be delivered before the entire class in the amphitheatre of the hospital and the students would be expected to take careful notes for future study. In a large hospital it would often be possible to find a number of cases in different stages of a given disease. These cases would serve as illustrations and would help to impress a distinct picture of the disease upon the students' minds.

(6) Patients with chronic diseases often remain in a hospital for several weeks. If a given case were shown to each section in turn it would be possible for the entire class to see the same patient in the course of one rotation.

(7) I believe that the students should be required to pass both a practical and a written examination in auscultation and percussion at the end of the second year in order to show that they are competent to begin section work.

THE CASE OF A MAN WHO SWALLOWED HIS SUSPENDERS; REMOVAL BY EXTERNAL ESOPHAGOTOMY; RECOVERY.—OTHER SIMILAR CASES.

BY MAURICE H. RICHARDSON, M.D., BOSTON.

WILLIAM H., shoemaker, aged twenty-nine, entered the Massachusetts General Hospital on April 13, 1899. He had been discharged a few days before from the Worcester Insane Asylum, of which he had been an inmate for thirteen months. He said that two weeks before entrance, while despondent, he attempted to swallow his suspenders. He succeeded in getting down certain portions of the suspenders and some broken glass, but just how much was uncertain.

I questioned the patient repeatedly, but could get little information as to what or how much he had succeeded in getting by the fauces. He was not unwilling to tell, but he was dazed and stupid and somewhat silly. He complained of no pain, but rather of a discomfort under the sternum while eating. The food at times passed easily into the stomach; at times it was immediately regurgitated. There had been no blood in the regurgitated material.

The history given by this mentally unbalanced patient would seem extraordinary, except that the insane do the most incredible things. I had had some experience with foreign bodies in the melancholy and suicidal, and in every case operation had demonstrated the truthfulness of the patient's statements, even when it was hard to believe them. I therefore was inclined to accept as a fact that somewhere in the alimentary tract would be found portions, at least, of the man's suspenders, and perhaps other things. The precordial discomfort and the occasional regurgitation suggested impaction in the esophagus. The man was physically strong and well developed; mentally, he was slow and stupid. Nothing could be seen or felt in the fauces. With the olive-tipped probang an obstruction of some kind was perceptible in the esophagus at or about the level of the transverse portion of the aortic arch. Nothing metallic could be detected. An x-ray negative showed unmistakably a suspender buckle at the level of the arch, and possibly another higher up.

The safest route of removal — whether by mouth, by external esophagotomy, or by gastrotomy — was the most important question in this case. The chief danger in esophageal impaction is from ulceration into the great vessels, especially when the impacted body is a flattened one with sharp edges — a coin, a tooth plate, for example. Moreover, the usual time for a fatal erosion is two weeks or less. In this case, therefore, the erosion, if any was taking place, must have been sufficiently advanced to make even the most refined manipulations dangerous. Indeed, it would be by no means surprising if attempts at extraction, by whatever route, would end in a deluge of blood from the aorta. The selection of route would depend, not upon the facility with which a hemorrhage might be checked — for such a hemorrhage could not, of course, be checked — but rather upon the feasibility of detachment and removal without causing that hemorrhage.

The instruments usually selected for removing foreign bodies from the esophagus through the mouth cannot with intelligence be either directed, applied to the foreign body, or withdrawn. Some of them, once fast to a foreign body, cannot be made to let go. Some years ago the coin catcher got fast to a tooth plate impacted at the lower end of the esophagus, and in attempts to detach it enough force was applied to it to break off the metal end of the coin catcher. No harm was done in this case, but it is easy to imagine what might have happened — what, in fact, often has happened in trying to dislodge foreign bodies. On the other hand, I removed with great ease, by means of a coin catcher, a tooth plate which had been for eleven months impacted in the esophagus behind the sternoclavicular joint. I had fully decided to operate through the neck and was using the coin catcher to determine the firmness of the impaction, when the plate became detached and was drawn up.

In the present case the impaction was considerably above the aortic arch. Though we could not make out exactly the kind of buckle, it was evidently a flattened metallic thing, with sharp edges, and it was caught in most dangerous proximity to the aorta and its great branches.

From these considerations I decided to take no chances by instrumentation through the mouth. Gastrotomy was not seriously considered, because the foreign bodies were high up. By external esophagotomy the esophagus could be inspected, felt of, the foreign bodies could be accurately localized, instruments could be directed, applied and withdrawn with precision.

External esophagotomy was performed April 15th. As soon as the esophagus was opened, a thin, brownish, foul-smelling fluid escaped. The finger detected at once that the esophagus below the incision was plugged with something soft. By means of curved, long-bladed hemostatic forceps there were first removed a ball and string attached to a brass ring; then half a suspender web with two buckles; then a third buckle — all covered with a dark, foul-smelling slime. The olive probang, the coin catcher, the bristle probang were successively passed into the stomach without meeting further obstruction. With the finger an ulcerated area could be felt just above the aortic arch. The esophageal wound was closed in two layers with fine, interrupted silk sutures. The external wound was closed except for a gauze strand, leading from the esophageal sutures.

The wisdom of provisional gauze wicking was shown, I think, by this case, for at the end of twenty-four hours there was a fully-developed wound infection, with a temperature of 104°. Thorough irrigation of the wound was followed by rapid subsidence of the infection, the wound rapidly healed, deglutition became normal. The patient was discharged on the 29th of April, physically well, but mentally as unsound as ever. Seven months later, I received the report that the patient was very well, both physically and mentally; that there was no trouble in deglutition and that the wound was in good condition.

The things that an unbalanced patient may do are certainly extraordinary. That he may do them should be borne in mind in obscure symptoms connected with the alimentary tract. My experience has not been large, but it has been enough to guide me to the lesion in several curious cases, some of which I have already published in detail.

One of the most extraordinary was that of a strong young woman who swallowed successfully a gold pencil. She then got an open safety pin stuck in her gullet and detached it with a steel crochet needle, which she then successfully swallowed. This was followed by a lot of common pins. For gastric symptoms, I opened the pylorus, through which I found sticking the open safety pin. I left the other articles in the alimentary canal, whence in due time they all emerged, except the crochet needle, which never has been found.

My first dissecting-room subject had her stomach full of straw. The specimen is now in the Warren Museum. Recently, Dr. Brewster removed for me a ball of hair from the small intestine of a girl of ten years old. This hair ball had completely obstructed the lumen.

An insane woman, after her cup of tea, swallowed the sharp-edged silver teaspoon. It lodged in the

esophagus bowl downward. I succeeded in removing it by external esophagotomy, without hemorrhage. She died, however, in a few days from some unknown cause. There was no wound infection to account for her death.

In another case, that of a hysterical girl, I opened the epigastrium for a tumor supposed to have been caused by the habitual swallowing of rubber gum. Though no gum was found, there was an abscess about the pylorus which I have always thought was caused by the gum. This girl recovered.

Perhaps a little remote, anatomically at least, are the cases of foreign bodies introduced into the rectum. They illustrate, however, the freaks of the insane, the hysterical and the perverted. The most extraordinary instance I have known was the man who lost a ketchup bottle in his rectum, whence Dr. Warren successfully removed it.

Dr. Warren's case recalls that of a general paralytic, in close confinement, whose silver-plated dinner knife disappeared. It was a brilliant exemplification of the possibilities of eliminative diagnosis, for a careful search eliminated every possible place of concealment except his rectum, where, in fact, he had concealed it. He had thrust the knife through the rectal wall into the abdominal cavity, where it was lying free when I explored. A general peritonitis was under full headway, and he died.

Another case deserves mention, though it is not quite analogous to those described. A hysterical and neurasthenic woman declared that she had accidentally swallowed a plum stone, and suffered, she said, extreme torture from its pressure in the stomach. A surgeon, thinking (as I believe rightly) that her troubles were imaginary, passed an instrument into the stomach, withdrew it and showed the patient a plum stone. Unfortunately, the patient immediately declared that it was not that kind of a plum! I finally opened the stomach in this case, but found nothing. The woman died later from an acute inflammation of the alimentary tract caused by drinking, with suicidal intent, corrosive-sublimate solution.

THE CLINICAL VALUE OF OLIVER'S HEMOCYTOMETER. [1]

BY DAVID D. SCANNELL, A.B., HARVARD MEDICAL SCHOOL, BOSTON.

DURING the course of a series of lectures on the physiology of the blood delivered before the Royal College of Physicians, of London, in 1896, George Oliver, an English physiologist, described a new and ingenious method of red corpuscle estimation, at once time-saving and accurate as compared with the Thoma-Zeiss procedure. The invention of this new device was prompted by the same desire for physiological exactness and investigation that led to the production of his tintometric hemoglobinometer, the observations of which are fully as accurate, reliable and definite as the hemoglobinometers of von Fleischl and Gowers.

In his argument for the need of an apparatus more exact and consistent than the Thoma-Zeiss counter, Oliver says: "The present methods for determining the red corpuscles are, (1) the examination by the microscope, and (2) the percentage estimation by the centrifugal machine. The former enumerative method is perhaps on some grounds preferable, especially for clinical work, for it enables any alterations in the individual corpuscles to be observed at the same time. But repeated observations have shown that this same method as ordinarily applied does not possess that degree of accuracy with which it is usually credited. Even though all the necessary precautions have been taken, a series of trials derived from the same mixture of a sample of blood may yield the wide variation of *ten per cent.* The possibility of such a large margin of difference must render the method totally unreliable for any physiological inquiry, however immaterial it may be for clinical purposes. Extended enumeration will, of course, average the discrepancies, but it necessarily involves the expenditure of more time, labor and eyesight than are at the disposal of most observers, especially, too, as physiological work demands the largest possible collection of data and much repetition. It was therefore necessary to search for a simple and time-saving method of hemocytometric observation which, founded on extended enumeration in the first instance and attaining to the accuracy of it, might be substituted for it."

Oliver's hemocytometer is based on the following principle: In the process of drawing out a glass tube, the sides of the tube become minutely corrugated in the direction of its axis. When a candle or small gas flame is looked at through this tube containing water, a transverse line of light is seen, consisting of closely packed minute images of the flame produced by the above-mentioned corrugations of the glass. The parallel furrows and ridges are demonstrable with the aid of a small magnifying glass. Each ridge acts as a lens, hence the horizontal line made up of an aggregation of the images of the flame.

Oliver discovered that if, instead of the water as a refracting medium, he used normal blood diluted with some fixing fluid (such as Hayem's, ferrocyanide of potash, or sodium chloride), the resulting mixture presented a degree of opacity varying according to the amount that the blood was diluted by the fixing fluid.

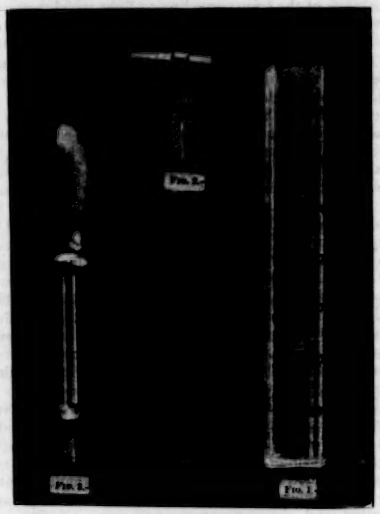
The opacity so produced completely shuts off all view of the transverse line of light until, on still further diluting, a definite point is attained when it can be seen faintly as a delicate thread of light running transversely across the tube, "the dawn, as it were, of the bright minute images of the flame seen when the opacity is absent or still further reduced." Repeated observations by Oliver have shown that the development of this delicate horizontal line by dilution of the blood with either of the fixing fluids mentioned is an extremely sensitive index of the number of red corpuscles present in any individual blood. This was determined in many ways; for example, by the observation that the amount of fixing fluid required to bring the horizontal line into view was always in proportion to the different quantities of the same blood experimented with, and therefore in proportion to the number of the blood corpuscles present at each observation.

The apparatus required for such observation is extremely simple and should be relatively inexpensive. It consists of (1) a flattened graduated tube; (2) a capillary pipette having a capacity of 10 cubic millimetres of blood; (3) a mixing pipette for which an ordinary medicine dropper is a perfect substitute; (4) a candle or gas flame, and (5) a fixing solution, preferably Hayem's.

[1] From Dr. Richard C. Cabot's clinic at the Massachusetts General Hospital.

(1) A flattened tube was adopted because it was found that a round one of such a diameter as to furnish the required degree of opacity would only provide a sufficiently wide scale when a much larger quantity of blood was taken than was commonly used for blood observations; whereas, when the observation was made through the long diameter of a flattened tube, it was unnecessary to use more than 10 cubic millimetres of blood, and the scale is lengthened in proportion to the reduction of the lateral area. A tube of 15 millimetres in the long diameter and five millimetres in the short diameter was found to produce a satisfactory workable scale of 12 centimetres for the determination of 125 per cent. of red corpuscles. The divisions of the scale represent two per cent. and they are sufficiently apart to allow the eye to read one per cent. and even less (Fig. 1).[2]

The determination of the scale was made by the enumerative method applied to 120 squares applied to



the blood of normal man. One hundred per cent. represents the generally accepted standard of 5,000,000 corpuscles per cubic millimetre, and each degree is, therefore, the equivalent of 50,000 corpuscles: 100 per cent. = 5,000,000 corpuscles; 95 per cent. = 4,750,000; 90 per cent. = 4,500,000; 80 per cent. = 4,000,000; 50 per cent. = 2,500,000, etc.

(2) The amount of blood required is measured by a capillary pipette, or automatic blood measurer, having a capacity of 10 cubic millimetres. The end which is presented to the drop of blood is well pointed and polished, so that all traces of blood may be easily removed. The lumen is large enough to permit the passage of a good-sized needle threaded with darning cotton, and is therefore readily cleaned and dried (Fig. 2).

(3) The mixing pipette, or ordinary medicine dropper, is provided with a rubber nozzle which fits over the blunt polished end of the capillary pipette (Fig. 3).

(4) A small-sized wax candle, as, for instance, a Christmas candle, is preferable, since it furnishes a more definite and delicate line than is obtained from a large, coarse flame. However, a reduced gas flame answers perfectly well.

(5) While any of the fixing fluids mentioned above are good, yet Hayem's solution was selected as the most satisfactory for these reasons: (*a*) It is cleanly to use; (*b*) the corpuscles are less affected by it than by any of the other fixing agents, and may be examined microscopically after the observation has been made without fear of material changes, and (*c*) the reading undergoes no variation even after the lapse of many hours (for example, twelve), so that the blood may be washed into the tube and the observations made later if convenient. The constituents of this solution are:

Hydrarg. chlorid. corrosiv.	.5 gramme
Sod. chlor.	1.0 "
Sod. sulph.	5.0 "
Aq. dest.	200 c. c.

Oliver anticipates an objection by stating that it may be suspected that the mercuric chloride present in Hayem's solution may precipitate the proteids of the plasma and thus cause a variable addition to the opacity produced by the corpuscles. This point has been carefully tested, however, with the result that it does not present a source of error.

Apart from the leukemic condition, the white corpuscles do not affect the readings, according to Oliver. The proportion of one white to 500 reds, or one-fifth per cent., is equivalent only to one-tenth of one of the smallest divisions on the scale, and this is unreadable. So that even were the whites to increase up to one in 250, the rise would not appreciably affect the reading of the red corpuscles.

For clinical work I find this method not only simple and accurate, but also eye-saving and rapid. The whole process from beginning to end can, after a little experience, be completed in from five to ten minutes, certainly a saving of time compared with the twenty-five or thirty minutes usually expended by most observers in the preparation and count when the Thoma-Zeiss apparatus is used. Furthermore, it reduces to a minimum the personal equation in the numerical estimation of the red corpuscles, a factor which, with the Thoma-Zeiss counter, is constantly present and indeterminate.

In some cases, of course, it is important to ascertain the size and appearance of the red corpuscles, and therefore the microscopical examination of the fluid is sometimes a useful addendum in cases where changes in these respects might be looked for. As stated before, the nature of the fixing fluid renders this microscopical observation perfectly possible and accurate even after the lapse of many hours.

Technique.— This is extremely simple, and for its success depends mainly on speed. The capillary pipette is first thoroughly cleaned and dried (unless previously so) by the passage of the threaded needle. The mixing pipette, with the small rubber nozzle attached, is next filled up with Hayem's solution and placed conveniently. The ear is then punctured, as for the ordinary blood count, and "milked" gently until a fairly large drop is pendant. The size of this drop is about that required for a white count. The polished pointed end of the capillary pipette is applied

[2] Photographs taken by Mr. Percy E. Brown.

to the drop, which immediately fills the lumen of the tube by capillary attraction. At this point success or failure is dependent upon the degree of speed employed. The pointed end of the pipette is thoroughly and quickly wiped clean of blood with the fingers, the rubber nozzle of the medicine dropper is fitted over the blunt end of the pipette (most satisfactorily with both held horizontally, to prevent premature ejection of the blood by the weight of the mixing fluid), and the 10 cubic millimetres of blood are thoroughly washed into the flattened tube by the compression of the bulb of the dropper. Experience has demonstrated that the quickest and best results are attained when the patient himself holds the flattened tube in a position convenient for the operator. The filling of the pipette with blood, the application of the rubber nozzle of the drop glass to the blunt end of the automatic

blood measurer, and the washing of the blood into the tube, can all be done after a few trials in ten to fifteen seconds. If these steps in the technique are not done quickly, coagulation of the blood in the pipette is almost inevitable, necessitating a cleansing of the pipette and a fresh start. After the capillary pipette has been emptied of its contents, it is best to detach it from the drop glass and make the further additions of the fixing fluid from the latter. The amount of fixing fluid to be used in the subsequent steps will be roughly suggested by the degree of capacity of the mixture already in the flattened tube, or by the previously made hemoglobin estimation, though the latter bears no fixed relation to the final reading.

After the initial addition of Hayem's solution, the contents of the tube are thoroughly mixed by inverting the tube a few times with the thumb over its mouth, care being taken each time on removing the thumb to draw it over the lip of the tube so as to restore as much as possible the adherent fluid. This procedure is repeated after each addition of the solution. The tube and its contents should never be violently inverted or shaken, since such maneuvres readily produce a frothy condition which renders the reading unsatisfactory and erroneous.

The observation is made in a dark room (the darker the better), free from cross-lights. The small lighted candle is placed about on a level with the observer's eyes and 10 feet distant from him. This distance has been found experimentally by Oliver to give the most accurate readings. In making the observation, it is important to exclude as much as possible the diffuse light of the candle. This is easily and satisfactorily done by resting the lower end of the tube with its *long diameter* in line with the candle, in the concavity between the thumb and index finger (Fig. 4), and then holding the tube close to the eye.

The observer must be on the alert for the first appearance of the transverse line of light which progressive dilution brings into view. The earliest indications of the approach of this will be obtained on the sides of the tube when the latter is turned on its axis by the slightest rotation of the hand. The fluid is then added drop by drop until the line is just apparent all the way across the field when the long diameter is in line with the flame. The transition between the total absence of the line and its sudden presence is usually rather rapid. The appearance of the incomplete line on the sides, however, is a constant forerunner of the complete tranverse line and should put one on one's guard. The sign is extremely delicate and it requires at the beginning very careful observation to recognize it without overstepping the necessary dilution which obviously brings it more definitely and unmistakably into view. The first difficulty is the only one, for when the earliest appearance of the line has been once noted, it cannot fail to be afterwards recognized. Furthermore, there is no occasion for hurry in these later steps, for the opacity remains uniform for many minutes.

During the summer of 1899 the clinical observations appended below were made in the male medical Out-Patient Department of the Massachusetts General Hospital. In 27 cases, of which 10 were essentially blood diseases, the blood was examined both by the enumerative method of the Thoma-Zeiss apparatus and the percentage estimation of Oliver's hemocytometer. In this way the results of the former controlled those of the latter. In each case the Thoma-Zeiss count was applied to 10 large or 360 small squares at least, always two and often three drops of the mixed blood being taken. The hemocytometric observations were made twice in many cases, in order to test the consistency of the readings. A white count was also made in such cases as promised either a leucocythemic condition or a high leucocytosis.

From the following table it will be seen that the results, taken as a whole, are strikingly similar. The maximum difference in the two methods of estimation was 108,400, and this occurred in a case of splenic myelogenous leukemia where the whites numbered 480,000. As stated before, the leucocythemic condition is acknowledged to be a source of interference in the reading of the hemocytometer, giving a result less accurate than in non-leucocythemic states; and

yet, even in the presence of so many white corpuscles (a proportion of one white to five reds), the error of 108,000 in the reds as compared to the Thoma-Zeiss count, is not of very serious moment, such a difference not being of the rarest occurrence in the counts of two average observers on the same blood. In the other case of leukemia, lymphatic in character, where the whites were present to the extent of 102,400, the hemocytometric reading showed a disagreement of only 76,000. In cases with no pathological increase of the leucocytes the greatest difference in the results was 74,000, the smallest 4,000 and the average about 35,000. Even granting that the Thoma-Zeiss count was absolutely correct in each instance, this average discrepancy of 35,000 on the part of the hemocytometer would only imply an error of considerably less than one per cent. in the enumeration of 5,000,000 red corpuscles, and certainly this is so small as to be of no significance. In many cases, as stated before, the hemocytometric observations were made twice within a very short interval and in every instance the two readings were identical, a consistency not expected and rarely found in enumeration by the Thoma-Zeiss method.

No.	Diagnosis.	Thoma-Zeiss Red Count.	Hemocytometer Reading = Red Corpuscles.		Remarks.
1	Pernicious anemia.	1,704,000	34 per cent.	1,700,000	
2	Debility (?).	4,368,000	87 "	4,350,000	
3	Normal.	4,626,000	92 "	4,600,000	
4	Leukemia.	2,492,000	52 "	2,600,000	Whites 480,000.
5	Pleurisy.	4,734,000	95 "	4,750,000	
6	Gastric cancer.	2,579,000	51 "	2,550,000	
7	Syphilis.	4,428,000	90 "	4,500,000	
8	Secondary anemia.	2,632,000	52 "	2,600,000	
9	Pernicious anemia.	1,178,000	24 "	1,200,000	
10	Lymphemia.	3,726,000	73 "	3,650,000	Whites 102,400.
11	Normal.	5,024,000	99 "	4,950,000	
12	Pernicious anemia.	2,807,000	59 "	2,950,000	
13	Normal.	5,136,000	102 "	5,100,000	
14	Pernicious anemia.	2,934,000	59 "	2,950,000	
15	Debility (?).	4,784,000	96 "	4,800,000	
16	Normal.	5,040 000	99 "	4,950,000	
17	Pernicious anemia.	1,596,000	32 "	1,600,000	
18	Debility (?).	4,584,000	92 "	4,600,000	
19	Chlorosis.	3,583,000	71 "	3,550,000	
20	Gastric cancer.	4,080,000	81 "	4,050,000	
21	Secondary anemia.	4,120,000	82 "	4,100,000	
22	Normal.	5,472,000	109 "	5,450,000	
23	Gastric cancer.	4,120,000	82 "	4,100,000	
24	Debility (?).	4,824,000	96 "	4,800,000	
25	Pernicious anemia.	1,976,000	40 "	2,000,000	
26	Raynaud's disease.	3,486,000	70 "	3,500,000	
27	Chlorosis	4,264,000	85 "	4,250,000	

Clinical Department.

DIFFUSE PERITONITIS FROM ACUTE APPENDICITIS IN A GIRL AGED THIRTEEN YEARS; OPERATION; RECOVERY.

BY J. COPLIN STINSON, M.D., C.M., SAN FRANCISCO, CAL.

J. R., age thirteen, a thin, nervous child, although never sickly, was seen by Dr. D. A. Beattie, of Santa Clara, July 13, 1899. She had been acutely ill for thirty hours, complained of severe pain over the right side and tenderness over the whole abdomen, temperature 103½°, pulse 128. On his second visit at 3 P. M., temperature was 103, pulse 122. Ice bags were continuously applied and small doses of the mild chloride and salol given. At 6 P. M. Dr. J. U. Hall, of San Jose, was called in consultation and confirmed the diagnosis of appendicitis made by Dr. Beattie. At 12 o'clock midnight the pain was less on account of opiates, but the area of pain had extended. Temperature 102½°, pulse 112. The pain caused so much rigidity and spasm of the abdominal muscles that now a thorough examination could not be made. I saw the patient with Drs. Beattie and Hall at 8 A. M.

At 9 A. M. I made operation, assisted by Dr. Beattie. Ether was administered by Dr. Hall. An incision an inch long was made over the normal site of the appendix and in a line which followed the trend of the fibres of the external oblique aponeurosis. The subjacent muscles were separated in the direction of their fibres and the peritoneum opened. Pus at once escaped freely. The index finger of right hand was introduced, but no adhesions could be detected. The incision was enlarged and now measured about two and one-half inches. The pus was sponged and washed away and the abdominal cavity further examined. A large mass of inflamed, thickened omentum covered with pus was brought to the surface.

The appendix was gangrenous, bound down by fresh adhesions, contained two large concretions, but there was no perforation; the cecum was inflamed and sloughy. All intestines in sight were inflamed and covered with fibrin and pus. Pus escaped from the pelvis, the left and right sides of the abdomen. All pathological intestines, till normal bowels were freely seen and handled, were withdrawn from the abdominal cavity to the surface and covered with hot towels. The infected portions of the abdominal and pelvic cavities were freely irrigated with water, hot as the hands could bear, and all shreds and fibrin, etc., removed from the peritoneal cavity.

The pathologic omentum was excised. The omentum was spread out, the vessels in it were tied with fixation ligatures of fine chromicized catgut and the omentum cut off external to the tied vessels. No mass ligatures were used. The mesentery of the appendix was separated by dissection well down to the cecum, a bleeding vessel was clamped and ligated with fine chromic catgut, after which the cut edges of the mesentery were approximated with continuous catgut sutures.

The appendix was held up by the tip, and after dividing in a circle its peritoneal and muscular coats about one-quarter of an inch from the appendico-cecal junction, leaving the lymphoid and mucous coats uncut, the divided layers were dissected back to the cecum and a narrow-bladed lock forceps was applied transversely to the lymphomucus cylinder, close to the cecum to temporarily close its canal. The appendix was cut off close to the forceps, leaving only a small cuff of mucus membrane, etc., protruding beyond the outer edge of the forceps. The cuff was cleansed with moist gauze and the cut edges of the mucous and lymphoid coats were united with a single layer of continuous fine chromic catgut stitches, after which the forceps were removed. Several continuous sutures were also used to approximate the peritoneal and muscular coats, but the latter stitches did not hold as the layers were very soft. All pathologic and exposed intestines were freely irrigated with hot water; all visible pus, shreds, plastic fibrin, fibrinous exudate, etc., on the surface of the bowels, etc., were removed with the fingers and gauze pads. The infected portion of abdominal cavity, intestines, etc., were again thoroughly flushed with hot water till the fluid came away clear, dried with sponges and the intestines returned within the abdomen to as near as possible their normal positions.

The peritonitis was a spreading or diffuse infection without the formation of protective adhesions and (as near as could be estimated during a very hurried and critical operation) involved the appendix, the cecum, the lower one-half of the ascending colon, over seven feet of the ileum, the adjacent omentum and the parietal peritoneum extending from the infected viscera.

The inflamed, sloughy surface of the cecum, the line of sutures at the former site of appendix and the adjacent parietal peritoneum were lightly covered with aristol. The upper angle of the wound was closed with several medium-sized continuous chromicized catgut sutures. No more suturing was done, as the patient was in a weak condition and I did not wish to further prolong the operation.

The balance of the wound was consequently left open and lightly packed with borated gauze strips each two inches wide. A strip was carried down to the posterior abdominal wall between the ascending colon and the lateral wall; a second between the cecum and the lateral wall, a third between the inner surface of colon and other adjacent coils, a fourth between the inner surface of cecum and adjacent viscera, and a fifth under the inner portion of abdominal wound for about three inches between the parietal peritoneum and intestines. The surface of the cecum was lightly covered and the wound lightly packed with gauze, and the dressings, adhesive strips and binder applied. She was put to bed in rather weak condition but shock was combated successfully. I saw her twice after the operation. The post-operative treatment was carried on by Dr. Beattie.

On July 8, 1899, some gas with foul odor escaped from wound, but no fecal matter was ever noticed. The wound healed kindly and was solidly cicatrized by August 25, 1899. She was allowed up September 8, 1899. Her general condition is good. She feels well and looks strong. Her appetite and digestion are good. She has no pains in the abdomen; the scar is two and five-eighths inches long, and no hernia has as yet developed.

Reports of Societies.

BOSTON MEDICO-PSYCHOLOGICAL SOCIETY.

J. W. COURTNEY, M.D., SECRETARY.

REGULAR meeting at the University Club, Thursday, October 19, 1899, DR. R. T. EDES in the chair.

REPORT OF A FEW CASES OF INSANITY TREATED BY THE COLD PACK.

DR. ABBOTT read a paper with the above title, chiefly with the view of calling attention to the marked social improvement (so called because of the patient's improvement in his social relations with those about him) which followed the occasional use, or the continuous use for short periods of time, of the cold wet pack in cases so excited, violent or otherwise difficult to manage, that they would have needed seclusion or restraint by nurses or the camisole.

Brief details were reported of a number of cases, including one of epilepsy, with irregularly recurring attacks of irritability increasing to well-marked epileptic furor, four of maniacal phase of manic-depressive insanity, two of mental deficiency with periods of uncontrollable irritability culminating in violent fits of anger, and seven of dementia precox whose conduct for different reasons made them difficult to manage, one being desperately suicidal, another destructive of walls and floors, others making violent attacks on patients or nurses, etc.

That the packs did not act as a means of punishment was shown by the fact that three patients frequently asked for them, many liked them, others were, at most, indifferent to them, and only two resisted them after having had two or three, and of these, one often expressed after them a feeling of great improvement. In every instance an occasional pack or two, or a series of daily packs for a week or two, was sufficient to enable the patient to have the liberty of the ward without special watching. No special therapeutic effect on the psychosis was observed except in the cases of manic-depressive insanity, and in one case of general paralysis, on whom it was tried for that effect alone; in those who had packs regularly for ten days or more there was marked improvement in nutrition. Many slept in the first pack and began to sleep better from that time.

The technique used was practically that described in Baruch's "Hydrotherapy," and it was found that if the very desirable results were to be obtained, four precautions must be very carefully observed: (1) Skin surfaces must be kept separated by wet sheet; (2) the blankets must be kept closely drawn around the neck to exclude the air; (3) the head must be kept constantly cool by means of frequently renewed wet cloths wrapped about it; and (4) the least possible time must be used in getting the patient into the pack. The water in which the sheets were wet was 80° F. for a first pack, about 70° for the second and 60° for subsequent ones. Menstruation was not considered a contraindication; the water was raised to 70° for two days, then lowered to its previous temperature. Patients were kept in the pack for one to three hours, occasionally even longer. In 25 cases treated no harmful results and no disturbing symptoms occurred. The cases were too few in number and the packs given for too short a time to warrant any conclusions as to their therapeutic value in the psychoses.

Dr. Page: I have been very much interested both in the paper and in this subject of hydrotherapy for some years. I would say first that it was never my intention to use it as a form of restraint or for purposes of discipline. I have always had in mind the beneficial and remedial effects of the pack whenever I have used it, and in order that it might not seem to be quite so closely resembling a form of restraint, at one time I secured a quantity of sweaters which were used, dipped those in cold water and applied them so that patients would get all the benefits of keeping the arms away from the surface of the body and not feel quite so constrained as in the ordinary pack. Of course they were wrapped with woolen blankets on the outside, but that would be a less objectionable form or appearance of restraint than a wet sheet wrapped tightly about the person. A record was kept of a good many cases at Danvers. Perhaps Dr. Worcester can give some details of those. I have not had access to the records for a long time and have not made an effort to refresh my mind in regard to them. Packs were used there, but not full packs as a rule — very few instances where the full pack was used. Partial packs were used, especially for insomnia. They used to have a practice of putting on wet bandages or packs, perhaps, to the lower extremities at bedtime. In all such instances a wet sheet was covered by one or two thicknesses of coarse woollen cloth, blankets, or something of that sort, and I think, almost always some waterproof material above that, and the patients were put to bed. Occasionally, instead of applying the packs or bandages to the lower extremities, I have had them applied to the arms, and in some instances it operated, I thought, as well, perhaps better, than where applied to the lower extremities. A few years ago, by the use of wet packs, the use of hypnotic drugs at the Danvers Hospital was almost entirely suspended. There were very few cases where any medicine was given for hypnotic purposes for months. I do not know how it is now, but I think very little hypnotic medicine is used there.

The effect that you want to produce of course should be considered, and your application should vary with the point you have in view, because water is a very powerful agent, and the effect produced by it depends very much upon the method by which you apply it. It seems Dr. Abbott has applied it practically by only one method. If you want to affect patients such as these reported by him, no doubt that was a proper expedient, but for strictly tonic effect I should not think it would be best to continue the pack so long as they were in his cases. A short pack is generally quite as good. Then, too, the water when used under pressure impinges upon the body as in the douche and has a mechanical effect, something of course like massage, and the length of time, variation of temperature and variation of pressure all have certain effects upon the system, and it is important, of course, to understand the physiology of the circulation, especially of the skin, effects of cold, etc., and to know just what you want to do in the case, because there are some principles that seem at first sight almost contradictory which are brought into the field of experimentation, and yet they are not contradictory; they all operate upon plain physiological principles. The fact that water is so very useful and can be used as a domestic remedy is evident from the fact that such a large number of European people, peasants especially, have used the Kneipp treatment for years. Some 200,000 or 300,000 volumes of Kneipp's water cure have been published and sold, and that is certainly proof that it is a popular remedy. I presume most of you remember Dr. Godding thought he had cured two or three cases of general paresis by water treatment. I do not know what the ultimate results were; he never gave a final account of those cases. I never expected to hear he had actually cured them, although he relieved them of some of the disagreeable symptoms, no doubt. I remember being told at the Sunnyside Sanitarium in Southport, England, that they cured there a young man who had been at the celebrated Hallowell Private Insane Asylum in England, and there, by Dr. Phillips, the superintendent, had been pronounced incurable; the friends had been told the young man was hopelessly insane. He was taken to this place and in about six months was restored, and no treatment given except the water treatment. In that case they brought about what the water-cure people have always advocated in certain cases where there was some poisoned condition of the blood; brought about what they called the "crisis," used the water almost continuously on certain portions of the body, kept wet packs on nearly all the time, if not all the time, until a series or crop of foul ulcers were developed, and those were then treated, but they said it would be impossible to heal up such ulcers under several months. The discharge would be peculiarly offensive and disagreeable, but they were never willing to say a case was incurable unless they had failed to benefit them by that method of treatment at that place, and the man who had charge of that was for years associated with the celebrated Harper, I think it was, who was the leading water-cure disciple of England, having a place at Mattock Baths.

I certainly have had great faith and great expectations in regard to what water will do. At Middletown we have not the facilities to carry out the treatment there as I did at Danvers, but I have been preparing plans and a place for the establishing of a hydropathic department, and eventually I certainly expect to have one in full operation. I would say while we do not use the packs there we do not use restraint. We have 2,000 patients, and not one has been under restraint for months.

Dr. Worcester: I don't know that I can add very much to what Dr. Page has said. Although I have from time to time been called in in the absence of other physicians, I have not had patients under my charge for any great length of time. Quite a number of cases during the time in which I have had charge of them have been taking hydrotherapeutic measures in one form or another, and with more or less varying success. I can recall two or three instances somewhat the character of those of which Dr. Abbott has spoken in which it was applied quite persistently without any very marked improvement; in fact I do not recall any case of that character in which the improvement was very decided as far as the troublesome, destructive or violent symptoms were concerned. There has been in a number of cases improvement in the general health and in the nutrition, and I can recall one case of what we classified as acute confusional insanity, although we were very doubtful about the case at the onset and at one time were quite confident she was going to pass into dementia, in which there was coincidently with the use of the packs very marked

improvement and the patient ultimately recovered and went away. I certainly think that the use of hydrotherapeutic measures in that form as well as in others is of very marked advantage in proper cases. I don't feel yet as if I had determined to my own satisfaction the cases in which it would be useful. I have met with very decided disappointment in some cases in which I had pretty confident expectation of benefit.

DR. NOYES: At the Boston Insane Hospital we have no facilities at present for hydrotherapy. Our efforts are directed mainly to the use of the bath tub. I have not tried the wet pack, but of course it is possible to get considerable range of therapeutic use with the bath tub warm baths. Beyond that we have not gone at all.

DR. PUTNAM: I have used the wet packs very largely in cases of debility and anemia and depressed nervous conditions, although not in these cases of pronounced mental disease, and I have been much interested in hearing what Dr. Abbott has said. I think that for getting the best effects as regards improvement in nutrition the wet packs should be followed by colder applications. It seems to me without that the bath as a whole lacks a decided element in its efficiency. The wrapping in the wet sheets and blanket is really to be considered, generally, as preparatory to cold applications, which are relied on to induce tonic contractions of the blood-vessels of the surface and interior of the body and to stimulate the processes of metabolism.

As regards the effect to be expected on the *morale* of the patient, I cannot help thinking the effect of the baths is a good deal like static electricity and any other agent of the sort, a means by which the physician carries one step further the influence of his authority and personal feeling. If he feels confidence in the value of the application or at any rate is able to assume a confidence and inspire the patient, and can make the bath point in that direction it seems to me the results are likely to be considerable. Simply regarded in and for itself I should not suppose on general principles that the baths would have very great effect in that way, and I should not imagine that they would have the effect which Dr. Abbott suggests, certainly not very often, in increasing the social good behavior, social self-control of the patient.

DR. BANCROFT: I think Dr. Abbott's paper very interesting and suggestive. We have tried the wet pack at Concord quite a little on a number of cases, and it seemed to me that it has had a temporary sedative effect and a permanent tonic effect on the cases in which we have tried it, particularly the cases of mania. I have been very much pleased in applying it to see how satisfied the patients were with the process. I recall only one case of excitement where a maniacal patient objected to the pack, and we were obliged after trying it for a week or two weeks to give it up because the struggles were so persistent, but in all the other cases in which we have tried it on maniacal subjects the patients have apparently liked it very much, and the first effect has been to make them quiet, and a number of the most excited cases have gone to sleep during the pack and have never made any particular objection to taking it. I think the wet pack as has been described to-night has this to say in its favor — it is cheap and does not require expensive apparatus, and can be used either in a private house or by any institution that is not provided with the more expensive apparatus for applying hydrotherapeutic measures. I think it is a therapeutic remedy that we should try in our cases. I have been disappointed, however, that the psychoses have not been modified in any way by this treatment. I cannot say that in any case in which we have tried it a mental cure has followed the pack. The improvement has been largely physical and sedative. A few cases have recovered, but I cannot say they recovered because of the application of the pack. The recovery came as it does in all acute cases at the proper time, and I cannot say that the application of the pack has hastened recovery, but I do think it is a help in these cases of excitement. I should recommend its use very strongly in such cases, particularly as a sedative.

(*To be continued.*)

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

NINETY-FOURTH ANNUAL MEETING, HELD AT ALBANY, JANUARY 30, 31 AND FEBRUARY 1, 1900.

PRESIDENT'S INAUGURAL.

THE first session on January 30th was opened by the Inaugural Address of PRESIDENT MACDONALD. This was brief, yet at the same time filled with valuable suggestions, and was received with scrupulous attention. After expressing his thanks to the Society for choosing him to preside over their deliberations, he took up the topic of a legal definition of the term "the practice of medicine," and proposed co-operation with the New York Academy of Medicine in order to establish such an interpretation as will exclude all forms of quackery. He suggested that the approval of the Society be withheld from State control of chronic infectious diseases until after the most careful consideration. He declared that the standards of the State Board of Examiners are the highest and most practical in the land and their work deserves the highest commendation. As to the schism between the Society and the American Medical Association, he said that the settlement was simple; let the Association admit the duly accredited delegates of the Society through the same door that was closed in the faces of the New York delegation at St. Louis; then the Association would be truly representative of the united medical profession of the United States. In his view of the field of national legislation on medical topics he took ground in opposition to the Gallinger Antivivisection Bill, and in support of the measure which Surgeon-General Sternberg has proposed for the increase of the medical corps of the army.

MEDICAL EXAMINERS.

Following the President's Address the State Board of Examiners, through their Secretary, DR. M. J. LEWI, reported 836 applicants for medical certificates examined and 165 rejected.

CARCINOMA OF THE STOMACH

was the first subject presented to the attention of the Society. DR. A. MCFARLANE, of Albany, read a paper and submitted cases showing increased hydrochloric acid.

AGE, SEX AND SEASON AS FACTORS IN NERVOUS DISORDERS

were discussed in a contribution by Dr. William C. Krauss, of Buffalo. He showed how each period of the life of men and women had its particular diseases, how conditions that were at one time harmless became at another productive of the greatest harm, and therefore how necessary it was to take into account questions of age, sex, seasons and general surroundings.

FACIAL PARALYSIS.

Dr. William M. Leszynsky, of New York, read this paper by title.

Dr. D. B. St. John Roosa, of New York, introduced the subject of

STRABISMUS.

At the last meeting of the Society, he observed, he called attention to a new operation for the cure of this defect. By this operation both muscles were stretched and divided at one sitting. Professor Panassi, of Paris, had performed 20 successful operations in the way referred to before reporting results, and since then Dr. Roosa and his colleagues had also performed many cases with success. It was important to the general practitioner to know that specialists in eye complaints could enter on these operations with knowledge as to what they were doing and a large amount of certainty as to the result. In 95 per cent. of cases they could ensure the removal of the deformity.

Dr. A. Edward Davis, of New York, followed with a paper showing what could be accomplished by means of non-operative treatment of strabismus.

THE DIFFERENTIATION AND TREATMENT OF OCULAR AFFECTIONS COMMONLY MET WITH IN FAMILY PRACTICE

was dealt with by Dr. Frank Van Fleet, of New York, who pointed out the great advances that had been made in connection with the treatment of ear diseases since it had engaged the attention of specialists. There was no reason why general practitioners should not make themselves familiar with all that had been ascertained in regard to the more common complaints, and so leave only the more obscure affections to be dealt with by specialists.

Dr. T. H. Halsted, of Syracuse, called attention to the significance of earache in children.

THE TEACHING OF THERAPEUTICS

was discussed in papers read by Dr. Eli H. Long, of Buffalo, and Prof. Reynold W. Wilcox, of New York, the former treating the subject in its bearing on undergraduates, while the latter referred to the instruction of post-graduates. Dr. Long said there were two things they had to deplore: on the one hand a growing skepticism as to the efficacy of drugs, and on the other an inclination to make a too ready resort to preparations. He thought they should protest against the dictation of the commercial houses as to therapeutics. In teaching it was best to commence with a consideration of the physiological conditions, and for this purpose the conference system was best adapted. Professor Wilcox said the problem of how to teach post-graduates was by no means a simple one. This was largely due to the fact that they had three classes to teach: (1) those who hold teaching positions in the smaller schools, and who want the latest information in regard to the results of discovery and research in matters pertaining to medicine; (2) recent graduates who elected a post-graduate instead of a clinical course in order to complete their training for the practice of their profession, and (3) the practitioners of several years' standing who wanted to learn all that was to be learned that would assist them in their practice. Post-graduate teaching was a failure unless it to some extent met the requirements of these heterogeneous classes. He confessed that sixteen years' experience had not enabled him to solve the problem with satisfaction to himself; but one conclusion he had arrived at was that, so far as possible, all such instruction should take the form of practical demonstration. Theories, new remedies, preparations, etc., were for the teachers to investigate themselves; as regarded their teaching, what was most important was that they should urge their students to attend cases in wards, and give them practical demonstration of what was being done.

THE CHARACTERISTICS AND SYMPTOMS OF WEIL'S DISEASE

were explained by Dr. Harlow Brooks, of New York, who also presented a pathological study on the subject.

Dr. A. Jacobi, of New York, in a paper entitled

THE TREATMENT OF TEMPERATURES AND HEART FAILURE,

described the ways in which it had been attempted to reduce increased temperatures. High temperatures he showed were not always dangerous, but on the contrary often exercised a minimizing influence on the disease. Where they were dangerous there was no reason why they should not endeavor to reduce the temperature, either by tonic treatment or by direct attack upon the micro-organisms.

Dr. James K. Crook, of New York, read a paper on

ACUTE CROUPOUS PNEUMONIA,

in which he discussed its pathogenesis and treatment in the light of the newer pathology. The efforts made to discover a serum for pneumonia, while not altogether satisfactory, were encouraging as far as they went; and considering the brilliant results obtained by the treatment of diphtheria, as well as what had been actually ascertained in regard to pneumonia, he thought there was good ground for believing that similar results would yet be achieved in connection with the latter disease. Incidentally the reader of the paper took exception to the opinion expressed in a published paper by Dr. Andrew H. Smith, that the condition of the lungs in pneumonia was not inflammation, but only a condition of germ growth. Dr. Crook agreed with him that the process was one of germ culture, but he thought that the condition might also be described as inflammation, though not analogous to other kinds of inflammation.

Dr. Andrew H. Smith, in opening the discussion on the paper, said he was pleased to know that Dr. Crook agreed with him as far as he did. At the same time he adhered to his previously expressed opinion, that pneumonia was purely a germ culture, and not at all properly describable as inflammation. The most important thing, however, in connection

with the discussion of the pathology of pneumonia was the fact of the double circulation of the lung. This fact had been overlooked to a singular extent in connection with the only disease in which its existence had an important bearing.

DR. H. P. HOPKINS, of Buffalo, thought that until pathologists and therapeutists made up their minds as to what was the proper germ to be attacked in pneumonia, general practitioners should remember the advice given by Dr. Jacobi in relation to another disease, and that was not to lose sight of the fact that every patient represented a separate individuality. In other words, they should attend to the constitution of their patients, and above all should not neglect hygiene and diet.

DR. CROOK, in replying on the debate, said he fully agreed with the last speaker as to the value of fresh air and diet; but while strengthening their patients' systems, it was also necessary to attack the cause of the disease by means of germicidal drugs or methods of treatment.

DR. WILLIAM H. THOMPSON, of New York, read a paper entitled

THE CLASSIFICATION OF INFECTIOUS DISEASES

in which he spoke of the harm that was done by labelling diseases infectious or contagious, and at the same time showed the confusion that existed even in the profession as to the use of these and other terms. Diseases of the kind usually thus described should, in his opinion, be divided into three groups. In the first should be placed diseases that are contagious and communicable, and for these the treatment should be isolation; in the second diseases that are non-contagious but communicable, and in these the treatment should consist of the destruction of the carriers of the infection; and the third of diseases which were inoculable, and these required specific treatment.

PROPHYLAXIS IN GYNECOLOGY.

A symposium of papers on this subject was next on the programme, but owing to the absence of several of the authors some of the papers had to be read by title. The full list was as follows: "Introduction," Dr. Henry C. Coe, New York; "Prophylaxis before and during Puberty," by Dr. W. Gill Wylie, New York; "Prophylaxis after Marriage," by Dr. Ralph Waldo, New York; "Prophylaxis in Obstetrics," by Dr. J. Clifton Edgar, New York; and "Prophylaxis in Gynecological Surgery," by Dr. William M. Polk.

STATE CARE OF TUBERCULOUS PATIENTS.

A special session of the Society was held in the evening in the Assembly Hall of the State Capitol for the purpose of considering the attitude that should be assumed to the State in regard to the care and treatment of tuberculous patients and the prevention of the spread of tuberculous infection. Members of the Legislature and the general public were invited to attend, and responded in goodly numbers. Several members of the Legislature took part in the speech making, and the result was a lively debate, the honors being carried off by the doctors, if the applause which they received was to be accepted as evidence of their success.

DR. EDWARD O. OTIS, of Boston, Mass., was the first speaker. He began by remarking that the fact that pulmonary tuberculosis was the most prevalent and destructive of diseases was proved by the mortality statistics of all countries. It was the cause of about one-seventh of all deaths, the proportion being three in twenty-two. It was worse where people were crowded together; it was contagious and therefore preventable, and it was a constant menace to the public health, because in large measure of the ignorance and carelessness of the people affected by it. The number of lives that could be saved would be the means of returning a large amount of the money expended in preventing the spread of the disease. Nearly all the countries of Europe had recognized the wisdom of making the matter one of State control, and several States in this country were now taking action in the same direction. The speaker then proceeded to describe the excellent results that had been obtained in Massachusetts, and expressed his hope that the people of New York State would succeed in their effort to get legislative action with the view to the establishment of a sanatorium and the adoption of other measures for caring for those afflicted with the disease and stamping out the disease itself.

DR. VINCENT Y. BOWDITCH, of Boston, followed with a detailed account of the work accomplished at the Massachusetts State Hospital for Consumptives at Rutland.

DR. EDWARD R. BALDWIN, of Saranac Lake, gave a cheering report of the results of the climatic and sanatorium treatment of the disease in the Adirondacks. Since the institution at Saranac Lake was established fifteen years ago, 1,200 cases had been treated. Of these three-fourths were in an advanced stage of consumption, and only a fourth in an incipient stage. The number of patients in an incipient stage was however, continually increasing, and so better results were obtained every year. In the last two years one-third had been in the incipient stage, and the results were: Twenty-three per cent. were discharged cured; in 56 cases the disease was arrested, 19 per cent. were improved, and only two per cent. died. They were careful to distinguish between complete recoveries and cases in which the disease could only be said to have been arrested, because it was necessary to allow some time to elapse to see whether the improved symptoms continued. Inquiries, however, which were being made showed that a large proportion of those in whom the disease had been arrested would, in course of time, be properly added to the number who had been cured.

DR. GEORGE BLUMER, of Albany, read a paper on the

INFECTIOUS CHARACTER OF TUBERCULOSIS AND THE PROGNOSIS OF INCIPIENT PULMONARY CONSUMPTION,

and DR. ENOCH STODDARD, of Rochester, dealt with the subject from the point of view of the duty and interest of the State in preventing the spread of infection.

The HON. HORACE WHITE, a member of the State Senate, heartily supported the proposed plans for taking charge of tuberculous patients, but the HON. OTTO K. KELSEY, a member of the Assembly, while expressing his personal sympathy in the movement, pointed out difficulties of a practical character that stood in the way, and made it extremely improbable that the Legislature would see its way to grant the

desired appropriation. There were, the latter speaker observed, enormous demands on the State for education, the care of the insane, prisons, canals, and a variety of other things, and for it to take care of all the people suffering from tuberculosis in the State — their number being estimated at 60,000 — was altogether too serious a matter to be entered on lightly.

DR. JOHN H. PRIOR, of Buffalo, replying to the last speaker, quoted figures to show that tuberculosis was increasing, and that the disease, accountable as it was for between 12,000 and 13,000 deaths a year, constituted such a serious state of matters as to call imperatively for State control. He ridiculed the idea that the burdens of the State were so great that it could not provide the small appropriation asked for, the object of which he reminded the members of the Legislature was not to make provision for all the tuberculous patients, but only to establish an experimental sanatorium, in which incipient cases could be treated with the view of discovering the best way of checking the spread of the infection. Even on grounds of economy, he ventured to say, it would soon be found that the money had been wisely expended. A number of other speakers continued the discussion, the preponderance of the opinion expressed being in favor of joint action by the State and local authorities, the former to establish the experimental sanatorium, and the latter to provide hospitals for advanced cases, and also to lay down and enforce regulations for stopping the spread of the infection. Members of the medical profession were urged to agitate the question among their patients and acquaintances, so as to educate public opinion, and get pressure brought to bear on the Legislature that would compel it to take action.

SECOND DAY.

The second day's proceedings commenced with a visit to the new Albany Hospital, where clinical papers and reports were read as follows: "Catheterization of the Female Ureters," by Dr. Charles P. Noble, Philadelphia; "The Modern Urethroscope; its Value and Limitations," by Dr. W. K. Otis, New York; "A Unique Case in Obstetrics," by Dr. F. H. Parker, Auburn; and "Uterine Fibroids, complicated by Pregnancy," by Dr. W. F. Ford, Utica.

In general session, the first subject to engage attention was

HUMAN AND BOVINE ANTHRAX,

on which a paper was read by DR. FRANK W. ROSS, of Elmira.

DR. JAMES LAW, of Ithaca, then gave a contribution on

BOVINE TUBERCULOSIS.

DR. V. A. MOORE, of Ithaca, entered into details as to the

PREPARATION AND USE OF TUBERCULIN,

with remarks upon the knowledge at present possessed of the difference between human and bovine tuberculosis.

In the course of the discussion which followed, DR. JAMES K. CROOK, of New York, described the clinical experiments he had conducted with tuberculin on human subjects at the New York Post-Graduate Hospital. The tuberculin had been obtained from the Board of Health, and everything possible was done to make the tests efficient, but the results were very unsatisfactory, and had quite discouraged him as to the utility of tuberculin in cases of human tuberculosis.

THE MEDICAL EXAMINER FOR LIFE INSURANCE AND HIS RESPONSIBILITIES

was the subject of a paper by DR. S. OAKLEY VANDER POEL, of New York, who showed that the medical officers of American insurance companies had been the first to commence the task of reducing physical disabilities and impairments to a scientific basis, the result being that now, instead of being compelled to reject a large proportion of the risks offered them, the companies were able to gauge the exact responsibility they were asked to undertake, and so know what to charge for the risk they assumed.

EXPERIENCE WITH THE ANGIOTRIBE.

Under this title DR. J. RIDDLE GOFFE, of New York, gave an account of various instruments that had been used for controlling hemorrhages, and said that the instrument he now showed had been used by him with almost invariable success. It was remarkable in these respects that it was only necessary to apply it for two minutes, and it had the extraordinary pressure of 3,000 pounds.

A paper by DR. EDWARD B. DENCH, of New York, on the importance of early recognition of

ACUTE INFLAMMATION OF THE MIDDLE EAR

by the general practitioner, was afterwards read. The early and free incision of the drum was advised, and the use of ear-drops, such as oil and laudanum, as emphatically condemned.

THE PRESIDENT'S ANNIVERSARY ADDRESS.

DR. WILLIS G. MACDONALD, in delivering his address on

THE RELATION OF THE CLINICAL LABORATORY TO MODERN SURGERY,

said there was an impression that the work of the modern surgeon was easier than that of his predecessors. So it was, for surgery was now an art that was much more certain in its results than formerly; but this very fact increased the surgeon's responsibilities, because the loss of a patient would not be so readily overlooked. It was more than ever necessary to guard against everything liable to produce septic conditions, and in this connection it was advisable to have their instruments and apparatus frequently examined. The laboratory also was of great aid to the surgeon in the way of providing analyses of the blood, urine, etc.

DR. SAMUEL G. GANT, of New York, gave an exhibition of

RECTAL INSTRUMENTS.

DR. F. H. PARKER, of Auburn, described a

UNIQUE CASE IN OBSTETRICS,

in which a dead fetus was removed from a woman after having apparently been in the womb for two years, and a few days after its removal she was delivered of a fully developed and healthy child.

DR. ROSWELL PARK, of Buffalo, contributed the results of some further investigations he had made since the last meeting of the society into the cause of cancer. The information which was being collected

at the State Laboratory went far, he said, to confirm the opinion as to the parasitic nature of cancer.

DR. GEORGE H. FOX, of New York, described the method by which it was now found possible to effect a complete cure of leprosy. He mentioned a number of cases, among them that of a gentleman who was now carrying on business as a merchant in New York, in which the most happy results had been obtained. While not ignoring the importance of chaulmoogra oil, he insisted strongly on the benefit that was imparted to patients by a cheerful prognosis.

SOME QUESTIONS ABOUT THE CARE OF THE HAIR

were discussed by DR. GEORGE THOMAS JACKSON, of New York. Incidentally he advised against the custom of shaving the heads of patients in fever and other cases, the advantages being doubtful, and the results, especially to women, being much inconvenience and unnecessary annoyance. For the ordinary treatment of the hair, he recommended the use of a little pure pomade. There was no custom more absurd than that of singeing the hair.

DR. ROBERT C. MYLES, of New York, contributed some remarks on the

SURGERY OF THE NASAL SEPTUM AND THE TURBINAL BODIES,

illustrating the same with anatomical specimens.

At this point in the proceedings, the REV. DRS. RAYMOND, President of Union University, and BULKLEY, editor of the *Christian Advocate*, were introduced, and papers of an interesting popular character were delivered, Dr. Raymond pleading for the requirement of a more liberal education of medical students, preparatory to their entrance on their purely professional studies, whilst Dr. Bulkley made a scathing exposure of the Christian Scientists and their subtle methods for imposing on the public. A suggestion by the latter that the medical profession should undertake the task of bringing all classes of quacks to justice called forth a protest from DR. JACOBI, who remarked that the previous efforts it had made in this direction had been so unfortunate in their results as to constitute a serious warning against their attempting anything of the same kind again. The proposals of Dr. Raymond in regard to the more liberal education of medical students were endorsed by Dr. Jacobi and others, and a standing vote of thanks was given to both reverend gentlemen for their addresses.

DR. A. M. PHELPS, of New York, exhibited a number of braces that were commonly used in the treatment of hip-joint diseases and among them the Phelps brace, a male child with the latter on his limb being shown, and the doctor giving ocular demonstration of the fact that he could, so to speak, play football with the boy without causing him the slightest pain.

DR. JOHN O. LEE, of Rochester, read by title a paper on

FRACTURES OF THE WALLS OF THE MAXILLARY ANTRUM.

DR. WILLIAM MABON, of Ogdensburg, read by title a paper on

SURGICAL OPERATIONS IN HOSPITALS FOR THE INSANE.

DR. H. BEECKMAN DELATOUR, of Brooklyn, made a contribution to the surgery of the stomach, in which he described a number of cases of gastrotomy and gastrectomy.

DR. F. W. SEARS, of Syracuse, called attention to the large number of instances in which sepsis was caused by the neglect of proper precautions in puerperal cases.

THIRD DAY.

At the beginning of the third day's sitting a report was presented from the committee appointed to consider the feasibility of getting a law passed to provide for the registration of medical experts. The opposition of the legal profession to any legislation of the kind proposed was so pronounced that the committee did not see any prospect of any law of the kind desired being enacted, and therefore recommended that they should be discharged, a suggestion which it was agreed to act upon.

A motion was passed expressing approval of the experimental work being done by the cancer hospital at Buffalo, and providing for the presentation to the Legislature of a memorial asking that the appropriation be continued.

DR. LUZERNE COVILLE, of Ithaca, presented a paper showing the

SHAPE OF THE SPLEEN AND ITS RELATION TO THE CHEST WALL AND ABDOMINAL VISCERA,

a subject on which, he remarked, the teaching of the text-books was vague and to a large extent contradictory.

DR. I. S. STONE, of Washington, D. C., submitted a paper entitled

SUPRAVAGINAL HYSTEROMYOMECTOMY,

accompanied by a series of cases in which tumors had been removed from the uterus.

DR. F. W. HIGGINS, of Cortland, read a paper on

ATRESIA OF THE VAGINA.

DR. W. FREUDENTHAL, of New York, described a case in which cerebrospinal fluid was discharged through the nose.

Among the remaining papers, most of which were read by title, was one by DR. THOMAS P. SCULLY, of Rome, dealing with

INGUINAL HERNIA,

and showing the comparative results of radical treatment by operation and treatment by injection. A larger percentage of cures by operation, he observed, could be claimed now than at any former period, but many persons preferred irrigations, and it was found that many cases could be successfully dealt with in this way.

DR. A. M. PHELPS, in discussing the paper, referred to the large number of cases of relapse which he had been called upon to handle at the New York City Hospital, in consequence of the inefficient treatment elsewhere by means of irrigations and trusses.

The attendance at all the sessions was large, and great interest was displayed in all the business and social sessions. At the closing session of the Society the following officers were elected for the ensuing year: President, Dr. A. M. Phelps, of New York City; Vice-President, Dr. George Seymour, of Utica; Secretary, Dr. F. C. Curtis, of Albany; Treasurer, Dr. O. D. Ball, of Albany.

At the close of the programme, votes of thanks were passed to the retiring president and others, and the new President, DR. PHELPS, having been installed, made a few happy remarks in appreciation of the honor conferred on him, and promising his best endeavors to fill the chair with advantage to the Society.

In the course of their visit the delegates were accorded a reception by Governor Roosevelt at the State House, and there was also a grand dinner at the new Ten Eyck Hotel, the attendance at which was unusually large, and the speeches of more than ordinary interest.

Recent Literature.

Twentieth Century Practice. An International Encyclopedia of Modern Medical Science. By Leading Authorities of Europe and America. Edited by THOMAS L. STEDMAN, M.D., New York City. In twenty volumes. Volume XVIII, "Syphilis and Leprosy." New York: William Wood & Company. 1899.

Two subjects, syphilis and leprosy, and three contributors occupy the whole of this volume of seven hundred and three pages of the "Twentieth Century Practice." The subject of Acquired Syphilis has been entrusted to Dr. E. Lang, professor of dermatology and syphilology at Vienna, the successor of Sigmund. A more competent person could hardly have been selected. In 1871, in his inaugural address as professor at the University of Vienna, Lang advanced the view that the syphilitic contagium must be a living organism, having the faculty of multiplying in healthy individuals, a view which he still maintains and explains thereby the pathological phenomena manifested by the disease process. At the same time, he distinctly recognizes that we have not yet acquired a clear knowledge of the character of the syphilitic contagium.

Lang holds that persons who have once had constitutional syphilis are rarely susceptible to a new infection, but there is no absolute immunity, and he states that he has almost every year occasion to observe cases of reinfection. He considers that clinical and experimental researches make it absolutely certain that a person does not become constitutionally diseased immediately after infection. In the matter of prophylaxis he is of the opinion that even the smallest lesion in a person who has had contact with a suspicious secretion should be carefully cauterized. If one can succeed in totally excising the initial lesion, the patient is frequently saved from an attack of constitutional syphilis — especially if this is practised before there is any enlargement of the inguinal glands. In regard to constitutional treatment, for general practical application, Lang seems to prefer inunction.

Lang's monograph occupies three hundred and sixty-nine pages, or more than half the whole volume. It is a worthy exposition of a most important subject, in which the author has deserved authority.

Dr. Jonathan Hutchinson contributes a short, terse article of twenty-seven pages on Inherited Syphilis. Hutchinson's position in regard to this subject is too well known to need further comment, but no one has a better right to form and to hold opinions upon it.

Dr. Prince A. Morrow, of New York, contributes the section, one hundred and seventy-nine pages, upon Leprosy, a subject which assumed additional interest for the inhabitants of this country when we made ourselves responsible for the Hawaiian group of islands. Dr. Morrow is a contagionist. As to the modes of contagion, he thinks it very probable that they are many, but that the precise manner in which the leprous virus is transferred from one individual to another is unknown. He is, however, more than ever impressed with the conviction of the widespread prevalence of infection through the upper air passages, whilst admitting the error of supposing that there is any one *exclusive* mode of infection.

Interstitial Gingivitis, or So-called Pyorrhœa Alveolaris. By EUGENE S. TALBOT, M.D., D.D.S., Professor of Dental and Oral Surgery, Northwestern University, Woman's Medical School. With 73 illustrations. Philadelphia: The S. S. White Dental Manufacturing Co. 1899.

The author devotes the first sixty pages of this exceedingly interesting book to the history of the disease and to the study of the histology and the microscopic anatomy of the jaws and the epithelial structures associated therewith. The author has evidently gone carefully over the literature of these subjects, and has selected the best for his readers' consideration. He has supplemented this with the results of his own observation and the reader is able to gain a clearer insight into the development of these parts than is accorded by many of the text-books on the subject. As to the uric-acid theory of this disease, the author says: "Uric acid when found is merely an expression of the uric-acid diathesis and is a coincidence." To support this view the author points to careful chemical examinations made in several thousand cases which gave only six per cent. in which uric acid could be observed. Attention is called to the excretion of large quantities of inorganic salts through the salivary glands, and to the irritation and inflammation which arises from this cause. This is especially true of children and is put down as one of the important causes of interstitial gingivitis. The author gives a careful list of predisposing and exciting causes of this disease, and brings to bear an overwhelming amount of evidence to support his views. He treats of the constitutional effects which may be produced, especially in the suppurative stages of the trouble, and gives careful attention to the prevention and cure of the disease. The book is a distinct addition to our knowledge of this subject and deserves the attention of both physicians and dentists.

General Pathology. By ERNST ZIEGLER, M.D. Translated from the ninth revised German edition. Edited by ALBERT H. BUCK, M.D., New York. New York: William Wood & Co. 1899.

The appearance of an English translation of this famous text-book cannot fail to be welcome to the English-speaking medical profession. In this, the ninth edition, the number of illustrations has been increased from 458 to 544. This adds greatly to the usefulness of the work.

The chapters on Retrograde Disturbances of Nutrition and Infiltration, and on Tumors show the greatest changes and alterations. The author divides the different kinds of degeneration which lead to the formation of hyaline products into four groups. These com-

prise (1) colloid and epithelial hyaline concretions; (2) pathological cornifications of epithelium; (3) amyloid degeneration of connective tissue and amyloid concretions; (4) the hyaline degenerations of connective tissues. Mucous degeneration is not included in these groups. The tumors are divided into three groups: (1) Tumors of the connective substances; (2) epithelial tumors, and (3) terat id tumors and cysts. The group of the epithelial tumors is divided into two lesser groups; one containing the papillary epitheliomata, the adenomata and the cystadenomata, the other including the carcinomata and the cystocarcinomata. Regarding the etiology of tumors the author takes an agnostic position. He does not accept Ribbert's theory that the main cause of tumors is the separation of individual cells from their normal situations, nor does he accept the parasitic theory. The so-called infectious granulomata are not classed with the tumors.

The translation is the work of a number of collaborators and has been well done. The book is attractively printed and bound.

Encyclopedia Medica. Under the general editorship of CHALMERS WATSON, M.B., M.R.C.P.E. Volume I, Abdomen to Bone. New York: Longmans, Green & Co. 1899.

It is proposed to issue this encyclopedia in twelve octavo volumes to be published quarterly, each volume to have at least 500 pages. The purpose of the publication, as announced, is to furnish medical men with a work which, differing from all existing ones, would be a complete and authoritative medical and surgical library in itself — concise, practical, up to date, easily referred to and at a moderate cost.

The present volume has fifty-nine headings of subjects. The list of contributors exhibits many names well known within and beyond the United Kingdom. Among others we notice those of Dr. Dreschfeld, of Manchester, Dr. Clouston, of Edinburgh, Dr. Rolleston, Dr. Theodore Williams, Dr. Patrick Manson, Dr. Lauder-Brunton, of London, Dr. Ogston, of Aberdeen, Dr. Byrom Bramwell, of Edinburgh, Dr. Robert Saundby, of Birmingham. It is proposed to deal with subjects at a length proportionate to their importance. This volume contains 579 pages; its size and general appearance are most satisfactory.

Loveliness. A Story. By ELIZABETH STUART PHELPS. Boston and New York: Houghton, Mifflin & Co. 1899.

This story, appearing first in the *Atlantic Monthly*, has been republished in book form. It is clearly written for a purpose, that purpose being an attack on the practice of vivisection. Loveliness is the name of a dog, owned by a wholly abnormal child. The dog is stolen, and is rescued at the last moment, when about to be the subject of a vivisection experiment, and restored to its pining mistress. The details we omit, merely remarking that they are quite unnecessarily harrowing and misleading. Our criticism of the book lies in its maudlin sentimentality. A serious question, about which, no doubt, there may be a certain legitimate difference of opinion, is treated wholly from an emotional standpoint and hence the argument has absolutely no significance. May we not ask that the opponents of vivisection at least approach the discussion of it in a dignified manner?

THE BOSTON

Medical and Surgical Journal.

THURSDAY, FEBRUARY 15, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.

HUMAN VIVISECTION.

WE hear it said and see it written in certain quarters, that the use of animals for experimental research and the advancement of medical knowledge is but the stepping-stone or prelude to the use or further use of human beings for the same purposes. In fact this is one of the arguments or appeals to sensibilities freely put forth by antivivisectionist agitators to fire the hearts of their followers and to secure new converts among those who are disposed to listen to reason and argument. It is not a suggestion or an accusation which the profession can afford to treat lightly or with disdain, much as we might be disposed to do so in our own country at least. It must be treated seriously and with earnest searching of the heart.

With the seventh sons of seventh sons, with natural bone setters, with layers on of hands, with those pseudo-scientists who derive their powers from supernatural sources — in fact, with all that class of pretenders who would reap where they have not sown and gather where they have not strewn, who would draw knowledge from the vacuity of ignorance, it is idle to confer and to such we do not address ourselves. But there is a large class of thoughtful, conscientious, well-balanced people to whom the physiological laboratory and the clinical wards of a hospital are a source of misgiving and honest perplexity. Their sensibilities should be carefully considered and their hesitancy reassured. Doctors as a class, and the doctor as an individual, are not inhuman. They are in fact very human, or let us say humane, quite as much so as the average citizen; we are willing to go farther and affirm that we believe they are more so.

We do not believe that in this country, at all events, patients either in or out of hospitals are deliberately or knowingly treated by doctors with cruelty, with recklessness or thoughtlessness. We do believe that educated physicians are guided by the golden rule more constantly, and even exceed it without any reasonable hope of a retroactive benefit more frequently, than any other class in the community.

Their greatest happiness is in the increase of sound knowledge, and their greatest reward lies in a capacity for increased usefulness to their fellow-men. We believe it is generally recognized by the profession that zeal should stop short of indiscretion, and that a thirst for knowledge should stop short of curiosity.

The attitude of the violent antivivisectionist is much that of the Middle-Age persecutor of the anatomist. It is generally admitted to-day that anatomy must be studied upon the cadaver, and in the same way it is a reasonable proposition that the care and cure of the sick must be learned in presence of the sick. The sick themselves often profit by the necessarily more thorough study of their condition, and not a few are grateful for the opportunity to be of some service to mankind. There must inevitably be some first time for the administration of a new drug and some first occasion for the performance of a new operative measure. We believe, however, that in both these procedures the experiment, if such it is to be called, is hedged around with every possible precaution. The physician or surgeon who would resort to either at the cost of distress or danger to his patient, without a reasonable hope of averting some worse evil or without the consent of the patient, would not be supported in such action by his professional colleagues.

One has only to ask what would suffering humanity lose to-day without salicylic acid and without laparotomy.

Notwithstanding the almost universal recognition of the indispensableness of the sick for clinical teaching, the profession itself is constantly seeking new sources for the instruction of students to supplement the hospital ward and to minimize the repeated examination of the individual patient. In support of this assertion we would call attention to an article in the issue of the JOURNAL for January 11th of this year.

In general, we believe that our fellow-citizens in this country and in this community not only can have but will do well to have and to show confidence in their educated professional men, of whatever walk in life.

STATE CARE OF THE INSANE.

THE newly-created State Board of Insanity has presented to the Massachusetts Legislature its special report, as required by the acts of 1898, whereby the Board was directed to suggest "such method or methods as in its opinion will most effectually provide for the care and support of the insane poor who, under existing laws, are cared for by or supported at the expense of the cities and towns of the Commonwealth," including plans for the remedial treatment of the curable insane and for the care of the convalescent insane.

Including the School for Feeble-Minded, the epileptics, the drunkards and the 112 children in the hospital cottages, of whom 23 are feeble-minded and 89 epileptic, there are under the supervision of the Board: (1) in the State institutions, including the criminal insane and insane criminals, 6,425 insane persons, of whom fully 90 per cent. may fairly be considered incurable; (2) in the Boston Insane Hospital 507; (3) in private hospitals 237; (4) in city or town almshouses 1,213; (5) at board in private families 224 — in all 8,606.

During the last ten years the increase in the number of the insane in the State insane hospitals and in the Boston Hospital for the Insane has averaged 271,04 yearly.

With regard to the care of the acutely insane who are curable and of convalescents, the propositions of the Board will probably be universally commended by those competent to form an opinion, namely: (1) That the acutely insane should not be delayed in coming under the best medical care; (2) that they should not be compelled to suffer the exhaustion of a long journey to a distant hospital, nor to take unnecessary risk of detention in a station-house; (3) that they should not be removed too far from their friends.

The recommendations of the Board will generally be accepted as wise, regarding these curable insane, that provisions for their treatment be made in connection with the hospitals for the insane now in existence by securing small houses at such distances from the hospitals as may be deemed best; such cottages or houses could be built or bought or hired. Of course, the curable insane will continue to be treated in the private hospitals and by competent physicians, so far as their means can afford them, in private houses in suitable cases. But too large a number must be sent to the public hospitals, in the absence of sufficient provisions for the treatment of patients with small means in our one corporate hospital for the insane; and for them it is only simple justice to place them elsewhere than in institutions crowded with the chronic insane. The Board very properly desires more time to study the problem before committing itself for or against a recommendation of a new hospital for the curable insane.

For the care of the increasing number of the chronic insane, the Board recommends that 2,000 acres of land be bought for gradually developing a colony for the insane. This plan has already proved to be a success in France and Germany and this country; it has been adopted by the Massachusetts School for the Feeble-Minded, it will be part of the hospital for epileptics in this State and we hope that the recommendations of the Board in this respect, perhaps with some modifications, will commend themselves to the Massachusetts Legislature.

The Board evidently expects that a small number of the incurables who are harmless and not needing constant or frequent attention from physicians will be boarded out in private families, but in a community like that of New England the number must be limited, although that limit is not yet reached.

The Board advises that "as soon as may be after the first day of January, in the year 1904, the

State Board of Insanity shall transfer and remove all insane persons dependent upon public charity within the Commonwealth, who are not cared for in any hospital, asylum or receptacle maintained by the Commonwealth, to such hospital, asylum or receptacle, so maintained, as the said Board of Insanity may deem expedient." This provision involves the transfer of 5,607 insane persons who are now "cared for or supported at the expense of cities and towns," to be supported by the State — in round numbers, two-thirds of the insane under the supervision of the Board. There can be no doubt as to the soundness of the general statement of the Board that all of the insane must be cared for under conditions absolutely controlled by it, and if in institutions, only in such as are owned or controlled by the Commonwealth.

We believe that all the local almshouses containing insane inmates should at once be required to get licenses from the State Board of Insanity, provided their condition be approved by the Board or made conformable to the Board's requirements. Failing that, the inmates should be sent to some institution owned by the State. At the end of four years the license system could be given up, if the Board's plan is adopted.

This is a matter that interests not only Massachusetts but all the States of the Union, and some of the States, notably New York, have already taken steps in this direction.

CLINICAL INSTRUCTION IN SMALL SECTIONS.

ALL signs are pointing toward definite changes in medical teaching in the near future, and it is already easy to see in what direction one of these changes is likely to be made. The reaction from the merely didactic lecture has been extreme, due no doubt to the growing feeling that the preparation for the practice of medicine, to be adequate, must be at first hand from patient to student, rather than through the mediation of an instructor, however gifted he may be in the exposition of his subject. It has long been recognized that such direct contact between the student and the subject studied is desirable, but the difficulties in the way of bringing about the proposed results have been manifold and apparently insurmountable, because of the increasing numbers of students on the one hand and the relatively few available patients on the other. To give each student an opportunity to work out for himself the problems of diagnosis has seemed a practical impossibility, which time has tended to increase rather than diminish. Hence has arisen the so-called clinic to large classes, a very much more valuable exercise than a lecture without practical illustration, but still falling far short of the ideal of instruction, owing to the practical non-participation of the students. By degrees the demand has grown, until now it appears that means must be found to meet it, that the student, during his course of medical study, shall have the opportunity of working out for himself the questions and difficulties which individual cases present. This means section teaching, which again requires many patients and, what is of equal practical importance, many instructors.

We are glad of this opportunity to call attention to a paper by Dr. A. H. Wentworth, printed elsewhere in this issue, which opens the way to an application of the principle of section teaching in general, with particular reference to the needs and opportunities of the Harvard Medical School. A reading of the pages will show that Dr. Wentworth has worked out a careful scheme, which permits each student in a given class to examine for himself a large number of patients, suffering from a variety of diseases, and therefore to gain an insight into various affections from his own investigations. In other words, we have here a demonstration of the possible working of a system which is sufficiently comprehensive in its scope to be of actual value. It is hardly necessary to say that we are in complete agreement with Dr. Wentworth in his insistence that this is the right way to teach clinical medicine and clinical surgery. We are also in agreement with him in the opinion that the didactic lecture, as we have continually had occasion to urge, is not relegated to a subordinate place by this plan, but simply increased in importance and dignity. The student will need more than ever before to have the relations of the subject and its bearing upon other subjects put before him in concise and systematic form, and this it should be the function of the heads of departments to do, and do well, a much harder task than they have ordinarily been called upon to perform.

It is evident that the method of teaching in small sections will demand an increased teaching force. This must be met fairly before the plan can, by any possibility, succeed. To expect one teacher to do justice to a large number of students or to himself in such practical instruction is out of the question. To obtain good teachers in sufficient number is therefore absolutely demanded. This should not be difficult in any progressive medical community, where young men are eager to teach and to learn through teaching. Just here, in our opinion, lies one of the chief merits of the system, in that it is sure to make better teachers as well as better students. To teach half a dozen men well, exposed to their questions asked under no restraint, is a test of ability which the lecture at a distance does not entail.

Provided the ordeal be not too great for the patients and their interests be carefully safeguarded, we see no reason why Dr. Wentworth's scheme of rotation should not meet with complete success. Taken in connection with Mr. Cannon's plan of case teaching recently discussed in the JOURNAL, as a supplement to the almost inevitable deficiency of available patients, we certainly have here outlined a plan of systematic teaching, quite superior in practical usefulness to anything heretofore proposed.

DUST STORMS ON BOSTON'S BACK BAY.

THE Boston Society for Medical Improvement will devote its next meeting, Monday evening, February 19th, to a consideration of the dust nuisance, especially as manifested in the streets of Boston, and particularly in the streets of its principal residential districts. If things continue as they have been, those who move and try to have their being in that district must clothe themselves and their houses, too, in brown khaki and wear respirators of antiseptic construction. The trials to which our fellow-citizens are exposed in dry weather are only surpassed by those which afflict Thomas Atkins on the veldt or karroo of South Africa. Whether the remedy is to be found in asphalted streets or in some other treatment, we trust that the Improvement Society will determine. Various experts will lend their aid, some to show us bacteriologically the micro-organisms with which the internal and external economies of the indigenous are loaded up, and others to suggest how the Back Bay may be made uncomfortable for the dust instead of the dust making it uncomfortable for human beings. It is reported that for the benefit of strangers who may not have seen a Back Bay dust storm a moving picture of this phenomenon of no more than ordinary virulence will be projected upon the screen by the aid of the calcium light — a chronomotographic dust storm.

It is also rumored that some statement will be made in regard to the usual disposition of the taxes collected for street watering. There will doubtless be a large attendance at this meeting, drawn thither as well by recollections of the past as by hopes for the future, by a sense of individual suffering as well as by a scientific zeal for the welfare of the human race, for which in a measure the members of the medical profession are trustees.

MEDICAL NOTES.

PLAGUE. — A decree has been issued at Lisbon announcing that plague has disappeared from Oporto and that the quarantine of that port has been raised. Recent information from Honolulu shows that the plague situation there has greatly improved. Another regular officer of the Marine-Hospital Service, Dr. Sanford, has been sent to Honolulu to assist Dr. Carmichael, the officer stationed there. The city of Honolulu is assisting these officers in every possible way and has appropriated $118,000, which is to be used for the erection of a filtration plant to ensure a pure water supply. The city has also made arrangements for the construction of a new drainage system. It is estimated that the expense incurred in connection with plague in Hawaii will not be under $1,000,000. In Manila plague is reported as being on the increase, and is creating considerable excitement and alarm. It is still prevalent at Hong Kong.

THE NAVY MEDICAL CORPS. — It is reported that Secretary Long has prepared a bill designed to encourage men to enter the Medical Corps of the Navy, where there are invariably more vacancies than candidates. The bill proposes to increase the rank of assistant surgeons (the grade that new men take on being commissioned) to that of junior lieutenant instead of continuing it at ensign, which it has been since the Civil War. This, it is hoped, will remove the objection regarding subordinate rank. Seven vacancies now exist for which a board is waiting at the New York Navy Yard to examine candidates. Any young doctor having good credentials may take this examination, and if he meets requirements the commission follows without the exercise of political or other influence.

A NEW METHOD OF GAS POISONING. — A fatal accident to the owner of a gas coin and slot machine was narrowly averted a few days since. The machine is designed to let into the house pipes a certain amount of gas for every silver twenty-five-cent piece dropped into the slot. The owner of the machine went to bed leaving the gas burning and when the gas was exhausted the light naturally went out; later a friend seeing that the gas was no longer burning dropped another coin in the slot, with the result that the gas escaped and nearly asphyxiated the owner of the machine. It might be wise to limit the application of the slot machine to less dangerous uses.

SMALL-POX IN NEW BRUNSWICK. — The New Brunswick Government officials are enforcing the health regulations in several counties in view of the outbreak of small-pox. The disease was brought to New Brunswick from the Province of Quebec, where a total of 280 cases have appeared up to February 7th. There are about 60 cases in New Brunswick, making about 340 in eastern Canada.

INFLUENZA EPIDEMIC IN MUNICH. — In Munich it is reported there are 60,000 cases of influenza, which has spread throughout Germany. In Berlin recently every bed in every hospital was occupied, and the hospital physicians are being severely taxed to properly care for their patients.

FAMINE IN RUSSIA. — The Imperial Bureau of Medical Affairs has issued a memorandum concerning the famine in the Government of Bessarabia, showing that $200,000 has been assigned for the relief of distress in that district. Sixty-nine thousand men are without work.

MORTALITY IN BOMBAY. — The number of deaths in Bombay, February 6th, was unprecedented, with a total of 408. The situation is aggravated by the advent of famine refugees.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, February 14, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 82, scarlatina 56, measles 84, typhoid fever 5.

OFFICERS OF BOSTON CITY HOSPITAL ALUMNI ASSOCIATION. — At the annual meeeting of this Association held February 6th, the following officers

were elected: Dr. John H. McCollom, President; Dr. Charles F. Withington, Vice-President; Dr. W. H. Robey, Jr., Secretary; Dr. W. H. Prescott, Treasurer; Dr. Paul Thorndike, member of the Executive Committee. At the annual dinner which followed the business meeting at Young's Hotel, about 80 members were present from different parts of the New England and other States. Dr. W. P. Bolles presided. The speakers were Mr. H. E. Bolles, who represented the legal profession, Drs. D. W. Cheever, J. G. Blake, George B. Shattuck, E. H. Bradford, C. J. Blake, Abner Post, J. H. McCollom. Dr. G. B. Henshaw, of Cambridge, read a poem.

ANNUAL MEETING OF THE CORPORATION OF THE MASSACHUSETTS GENERAL HOSPITAL. — The annual meeting was held February 6th. The election of officers resulted as follows: President, Charles H. Dalton; Vice-President, Francis C. Lowell; Treasurer, Franklin Haven; Secretary, Thomas B. Hall; Trustees on the part of the Corporation, Francis Blake, Edmund Dwight, Reginald Gray, Nathaniel Thayer, Henry P. Walcott, Samuel D. Warren, George Wigglesworth, Moses Williams. Four more trustees are to be appointed by the Commonwealth.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. — A regular meeting of the Society will be held at the Medical Library, 19 Boylston Place, on Monday, February 19th, at 8 o'clock P. M. The subject of the "Street Dust Nuisance" will be discussed. Remarks are expected by Dr. Vincent Y. Bowditch, Dr. Samuel W. Langmaid, Dr. Clarence J. Blake, Clifford Richardson, Esq., of New York, Prof. William T. Sedgwick, Prof. C. Frank Allen, and other prominent gentlemen. Arthur K. Stone, M.D., Secretary.

BOSTON SOCIETY FOR MEDICAL SCIENCES. — At a meeting of the Society held Tuesday, February 6th, papers were presented by Dr. H. G. Beyer and Dr. H. C. Ernst. Dr. Beyer spoke of some recent researches on "The Relation between Mental Work and Physique," with the general conclusion that such a relation actually exists. Dr. Ernst gave an interesting account of the "History of the Microscope," illustrated by many lantern slides.

JANUARY MORTALITY STATISTICS OF NEWTON, MASS. — The mortality statistics of Newton for January give the total number of deaths at 45, and the death-rate for the month 19.57. During the month more than 100 cases of contagious disease were reported, a large proportion being diphtheria.

NEW YORK.

A CASE OF IMPORTANCE. — A life insurance case of considerable interest and importance has recently been decided in the courts. A suit brought to recover upon an insurance policy issued by the Metropolitan Life Insurance Company upon the life of one Patrick O'Farrell was dismissed on the first trial for breach of warranty in giving a false answer to the question, "Did any of the parents, grandparents, brothers or sisters of the life proposed ever have consumption or any pulmonary or scrofulous disease?" To this question the medical examiner put down the answer, "No." It was afterwards ascertained that a brother and sister of decedent had died of consumption. A new trial was granted on appeal, the Second Apellate Division of the Supreme Court holding that the beneficiary might show that, although the insured gave a true answer to the question, the physician wrote it down incorrectly. On the second trial an agent of the company, who was present at the time when the medical examination was had, testified for the plaintiff to the effect that in reply to the question the insured stated that he "did not know." The medical examiner testified that he put down the answers as given by the insured correctly, and read them over after they were written down, when the insured signed the paper. A judgment for the plaintiff on the second trial, upon the verdict of a jury, has now been affirmed on appeal, the court holding that the insurer could not predicate a breach of warranty upon the falsity of the answer thus written by the medical examiner.

REPORTED RECOVERY FROM FRACTURED SPINE. — On February 6th, Bartholomew Moriarty, a hod carrier, sixty-five years old, was discharged as cured from St. Joseph's Hospital, Yonkers, where he had been under treatment for two months for a fracture of one of the cervical vertebræ. The fracture was clearly shown by x-ray examination and was the result of a fall from a building the last of October. He was at first treated by a private physician and appears to have made a partial recovery. Later, however, he began to suffer much pain and his left side became paralyzed from pressure on the spinal cord, and on December 8th, he presented himself at the Yonkers hospital, having hobbled in his disabled condition all the way from his home in Dobb's Ferry, a distance of five miles.

THE MOUNT SINAI HOSPITAL. — At the annual meeting of the managers of Mount Sinai Hospital, held January 28th, it was reported that $531,682 (less a mortgage of $80,000) had been paid for the plot of ground for the new hospital, and that the fund for the erection of the buildings now amounted to $439,175. It was stated that in consequence of the advance in the price of materials the cost of these will be considerably greater than was anticipated. Of the 3,065 patients admitted during the year over 81 per cent. were free. The number of deaths was 408, against 325 in the previous year. The number of operations were 2,098, a considerably larger number than in any previous year. The total number of patients treated in the hospital, dispensary and district service was 36,731.

ANNUAL BULLETIN OF STATE BOARD OF HEALTH. — The annual bulletin of the State Board of Health shows that the number of deaths in the State in 1899 was 121,820, an excess of about 850 over those in 1898, and of 2,550 over the average of the past ten years. The mortality among children under five was

1,800 less than in 1898, and nearly 5,000 less than the average for ten years; 29 per cent. of the deaths occurring in those under five, against the average of 35 per cent. In the maritime district the deaths under five were 1,100 fewer than in 1898.

Infirmary for Vassar College. — Mrs. Caroline Atwater, a resident of Poughkeepsie and one of the alumnæ of Vassar College, has doubled her original gift of money to the college for a new infirmary, on account of the great increase in the cost of building materials. Vassar, it is said, was the first college in the world to establish an infirmary of its own, having had one in the main dormitory ever since the original buildings were erected. The growth of the institution has rendered a separate infirmary building necessary, and the means for this are now supplied by Mrs. Atwater.

An Inaugural Address. — On February 12th, Dr. Robert F. Weir delivered his inaugural address as president of the Medical Association of the Greater City of New York. In the scientific portion of it he took for his subject "The Formation of an Artificial Anus," and the paper was discussed by Drs. Robert Abbe, W. Gill Wylie, A. G. Gerster, Wm. B. De Garmo, Frank Hartley, and other well-known surgeons.

Two Centenarians. — Mrs. Mary Ann Matthieu, of Oswego, N. Y., died recently, aged one hundred years, eight months. Sagie Evans, an English gypsy who was held in great reverence by her tribe, died in her tent, near Elizabeth, N. J., last week, at the age of one hundred and six. She was born in Northamptonshire in 1794, and had lived all her life in tents.

Testimonial to John Kelly. — At a conference of the political friends of the late John Kelly, held February 7th, it was decided that a contemplated testimonial to his memory should take the form of a nonsectarian ward of ten beds in St. Vincent's Hospital. Such an endowment is estimated at $30,000, and one-half of this amount has already been subscribed.

Society for Instruction in First Aid to the Injured. — The report of the Society for Instruction in First Aid to the Injured shows that since its establishment by the State Charities Aid Association, in 1882, 11,929 persons, including a considerable number of members of the Police and Fire Departments, have attended the Society's classes.

Alterations at Long Island College Hospital. — Plans are being prepared for the erection of a new fire-proof building to replace the central section of the Long Island College Hospital in Brooklyn. The new structure is to be four stories high, and will cost about $150,000.

Cremations in New York City. — The fact that a new cemetery is to be opened on Staten Island for the burial of the dead of Greater New York has brought out the other fact that out of the 60,000 people who annually die in the city, only 600 are cremated.

Paper on Medicine and Physicians. — At the February meeting of the New York Historical Society, a paper was read by Dr. Sidney H. Carney, Jr., on "Medicine and Physicians in the City of New York in the Year 1800."

Miscellany.

ADDITIONS TO QUARANTINE REGULATIONS.

Department Circular No. 6 of the Marine-Hospital Service, makes various additions to the quarantine regulations of the United States and its dependencies, designed to prevent the introduction of the plague. Among the additions of special interest are the following:

Passengers should not be vaccinated at nor *en route* from ports or places infected with plague. Such vaccination increases the liability to plague infection, and, by inducing fever and swollen glands, tends to confuse diagnosis at the port of arrival. This operation must be performed at the port of arrival, and just prior to release from quarantine.

Baggage labelled and sealed by the consul or medical officer of the Marine-Hospital Service at a non-infected city may be admitted without disinfection, even though shipped through an infected port or locality, provided it arrives with the seal unbroken. Such baggage should be accompanied by a certificate of origin and non-exposure to infection.

Passengers coming from an infected or suspected locality and desiring to take passage at a non-infected port should be held fifteen days under observation before being allowed to embark; otherwise the ship and all on board will be considered by the quarantine officer at the port of arrival in the United States as coming from an infected port. Any baggage from such infected or suspected localities destined for shipment through a non-infected port must be disinfected prior to shipment.

In a port where plague prevails, the vessel should not tie up to the dock. No lines should be passed to the shore that might permit rats on board. Passengers and cargo should be lightered; the crew not be allowed ashore, and personal communication from shore to vessel shall be under medical supervision. A statement to this effect from a medical officer of the Marine-Hospital Service will have weight with the quarantine officer at the port of arrival in determining the questions of disinfection and time of detention.

Mammalian animals, such as dogs, cats, monkeys, mice, etc., which not infrequently accompany passengers as pets, should not be shipped from a plague infected or suspected port or place.

THIRTEENTH INTERNATIONAL MEDICAL CONGRESS.

The Secretary-General of the Congress gives notice of the following reductions in rates:

(1) All the railway companies of France will grant to the members of the Congress a reduction of 50 per cent. upon round trip tickets as follows: Every member of the Congress will receive, upon application to the Secretary-General,[1] a ticket which must be stamped at the railroad station where he enters France, upon paying the full price of a single trip to Paris. At Paris the member will have this ticket viséd in the

[1] Dr. A. Chauffard, 21, Rue de l'École de Médecine, Paris.

office of the Congress, and it will then serve as a return ticket without additional expense. The journey to Paris having been paid entirely, and the return trip being free, there is of course a 50 per cent. reduction. It goes without saying that in order to secure this, the return trip must be to the same point at which the original fare was paid.

(2) The French Line (La Compagnie Générale Transatlantique) will allow members of the Congress a reduction of 10 per cent. on tickets from New York.

(3) The Secretary-General has arranged to provide to early applicants a number of lodgings, including light and service, at the rate of five francs per day; and various agencies also advertise reduced rates for lodgings.

For further particulars and application blanks for membership, address Dr. H. B. Jacobs, Secretary American National Committee, 3 W. Franklin St., Baltimore, Md.

ACTING ASSISTANT SURGEONS IN THE PHILIPPINES.

SURGEON-GENERAL STERNBERG, United States Army, writes us that the Medical Department of the Army is now in need of some additional assistance in the Philippines, and it is desired that candidates for appointment as acting assistant surgeons will make application to the Surgeon-General of the Army. Applicants must be graduates of reputable medical colleges, who have had practical experience, since graduation, in hospitals or in private practice. Candidates between the ages of twenty-five and thirty-five are preferred. Candidates should forward with their application one or more letters from well-known professional men, giving testimony as to their character and qualifications. Appointments will not be made through political influence, and letters designed to produce political effect will injure rather than benefit the applicant. All applicants will be examined as to their physical and professional qualifications for service in the Philippines before they are given a contract. Contracts are made for one year, with the understanding that the approved candidate will remain in service for a longer period if his services are required.

METEOROLOGICAL RECORD

For the week ending February 3d, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.			Relative humidity.		Direction of wind.		Velocity of wind.		We'th'r.*		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S...28	30.23	30	41	19	64	91	78	S.	E.	6	12	C.	N.	.01
M...29	29.47	32	48	15	100	50	75	N.W.	W.	22	24	R.	C.	.73
T...30	29.88	23	33	13	74	67	70	W.	S.	8	8	O.	C.	
W...31	29.51	24	35	13	90	66	78	N.	W.	4	20	O.	O.	
T....1	29.75	13	19	7	73	48	60	S.W.	W.	18	15	C.	C.	
F....2	30.04	13	19	7	62	40	51	W.	W.	12	6	C.	C.	
S....3	30.20	20	28	12	63	45	54	W.	W.	10	10	C.	C.	
☞														

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☞ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, FEBRUARY 3, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Scarlet fever.	Measles.
New York	3,550,053	1309	468	23.44	24.96	5.04	1.6*	1.68
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	507	163	19.19	16.72	5.70	.95	.95
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	223	66	23.30	11.25	4.50	3.60	.90
Baltimore	506,389	198	69	41.31	25.50	5.10	—	1.02
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	—	—	—	—	—	—	—
Washington	277,000	—	—	—	—	—	—	—
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	65	33	20.62	32.34	3.08	1.54	4.62
Nashville	87,754	—	—	—	—	—	—	—
Charleston	65,165	—	—	—	—	—	—	—
Worcester	111,732	35	13	25.74	14.30	—	2.86	—
Fall River	103,142	31	11	22.54	22.54	—	—	—
Cambridge	92,820	29	8	6.88	6.88	—	—	—
Lowell	90,114	28	8	14.28	17.85	—	—	—
New Bedford	70,511	19	6	—	10.52	—	—	—
Lynn	68,218	20	—	5.00	20.00	—	—	—
Somerville	64,394	15	3	26.66	13.33	13.33	—	—
Lawrence	59,072	24	13	20.75	16.60	4.15	—	—
Springfield	58,266	26	2	15.38	19.23	—	—	—
Holyoke	44,510	11	4	18.18	9.09	—	—	—
Brockton	38,759	—	—	—	—	—	—	—
Salem	37,723	12	1	—	25.00	—	—	—
Malden	36,421	8	1	12.50	12.50	—	—	—
Chelsea	34,235	12	4	8.33	—	—	—	—
Haverhill	32,651	8	2	25.00	50.00	—	—	—
Gloucester	31,428	8	4	25.00	—	12.50	12.50	—
Fitchburg	30,523	5	1	20.00	—	—	—	—
Newton	30,461	16	4	18.75	12.50	12.50	—	—
Taunton	28,527	19	5	10.52	42.08	—	—	—
Everett	28,102	6	—	33.33	—	16.66	—	—
Quincy	24,578	—	—	—	—	—	—	—
Pittsfield	23,421	—	—	—	—	—	—	—
Waltham	22,791	11	4	36.36	9.09	—	—	—
North Adams	21,583	10	4	10.00	20.00	—	—	—
Chicopee	18,316	3	—	66.66	—	33.33	—	—
Medford	17,196	7	1	—	—	—	—	—
Newburyport	15,636	3	2	—	—	—	—	—
Melrose	14,721	6	3	—	33.33	—	—	—

Deaths reported 2,677; under five years of age 903; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 552, acute lung diseases 554, diphtheria and croup 124, scarlet fever 38, measles 33, typhoid fever 23, diarrheal diseases 18, erysipelas 16, whooping-cough 16, cerebrospinal meningitis 10.

From typhoid fever New York 13, Philadelphia 6, Boston and Baltimore 2 each. From diarrheal diseases New York 8, Philadelphia, Baltimore and Fall River 2 each, Providence, Lawrence, Springfield and Taunton 1 each. From erysipelas New York 9, Philadelphia 4, Boston, Baltimore and Worcester 1 each. From whooping-cough New York 11, Boston 3, Baltimore and Lowell 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending January 27th, the death-rate was 22.6. Deaths reported 5,025: acute diseases of the respiratory organs (London) 490, measles 123, whooping-cough 99, diphtheria 94, diarrhea 43, fever 35, scarlet fever 33, small-pox (Hull) 1.

The death-rates ranged from 8.9 in Cardiff to 30.7 in Preston: Birmingham 27.2, Bradford 24.9, Gateshead 26.7, Hull 28.0, Leeds 23.8, Liverpool 29.5, Manchester 23.8, Newcastle-on-Tyne 26.0, Nottingham 19.1, Sheffield 22.5, Swansea 15.3.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING FEBRUARY 10, 1900.

M. S. ELLIOTT, passed assistant surgeon, commissioned passed assistant surgeon from October 6, 1899.

J. A. HAWKE, medical director, commissioned medical director from September 24, 1899.

R. A. MARMION, medical director, commissioned medical director from October 23, 1899.

D. DICKINSON, medical director, commissioned medical director from November 11, 1899.

M. C. DRENNAN, medical director, commissioned medical director from February 5, 1900.

T. H. STREETS, medical inspector, commissioned medical inspector from April 16, 1899.

G. E. H. HARMON, medical inspector, commissioned medical inspector from November 11, 1899.

J. W. WAGGENER, medical inspector, commissioned medical inspector from February 8, 1899.

T. A. BERRYHILL, surgeon, commissioned surgeon from April 9, 1899.

E. P. STONE, surgeon, commissioned surgeon from April 16, 1899.

R. K. SMITH, passed assistant surgeon, commissioned passed assistant surgeon from April 3, 1899.

R. S. BLAKEMAN, passed assistant surgeon, commissioned passed as istant surgeon from May 27, 1899.

J. C. ROSENBLEUTH, passed assistant surgeon, commissioned passed assistant surgeon from October 14, 1899.

G. W. COSTIGAN, passed assistant surgeon, commissioned passed assistant surgeon from February 8, 1900.

G. H. BARBER, passed assistant surgeon, detached from the Naval Academy, February 10th, and ordered home and to be ready for orders to sea duty.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING FEBRUARY 8, 1900.

WASDIN, EUGENE, surgeon. On expiration of leave of absence to proceed to New York, N. Y., for orders. February 5, 1900.

WERTENBAKER, C. P., passed assistant surgeon. To proceed to Martinsville, Va., for special temporary duty. February 7, 1900.

AMESSE, J. W., assistant surgeon. To proceed to Cleveland, O., for temporary duty during the absence of Surgeon W. J. PETTUS. February 6, 1900.

GIBSON, R. H., hospital steward. Relieved from duty at South Atlantic Quarantine Station, and directed to proceed to Gulf Quarantine Station, Miss., for duty and assignment to quarters. February 2, 1900.

O'GORMAN, T. V., hospital steward. Relieved from duty at Gulf Quarant ne Station, and directed to proceed to Louisville, Ky., for duty and assignment to quarters. February 2, 1900.

MCKAY, N., hospital steward. Granted leave of absence for five days from January 29th. February 2, 1900.

COMFORT, N. C., hospital steward. To report at Washington, D. C., for special temporary duty. February 2, 1900. To proceed to Manila, P. I., and report to Passed Assistant Surgeon J. C. PERRY, chief quarantine officer, for duty. February 7, 1900.

SOCIETY NOTICES.

SUFFOLK DISTRICT MEDICAL SOCIETY. — The Section for Clinical Medicine, Pathology and Hygiene will hold its meeting at 19 Boylston Place, Wednesday, February 21, 1900, at 8 P. M.

At 8 o'clock: Dr. J. L. Morse will report "An Analysis of Fifty-one Cases of Pneumothorax."

At 8 20 o'clock: Dr. R. W. Greenleaf will read a paper (postponed from the December meeting) entitled, "The Psychic Factor in Disease." The discussion will be opened by Dr. E. W. Taylor.

J. BERGEN OGDEN, M.D., *Secretary*,
Harvard Medical School, Boston.

AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION. — The meeting of the Association in Richmond, Va., will be held May 8th, 9th, 10th, 11th, not May 1st, 2d, 3d, 4th, as heretofore announced. The change in date is made to enable members to attend the Congress of American Physicians and Surgeons in Washington, May 1st-4th.

By order of the Council,

C. B. BURR, M.D., *Secretary*.

RECENT DEATHS.

WILLIAM V. RIGHTMORE, M.D., of Brooklyn, N. Y., died February 4th, at the age of thirty-six. He was a graduate of the Medical Department of the University of the City of New York in 1884.

T. DANA FITZSIMMONS, M.D., of Brooklyn, N. Y., a graduate of the Long Island College Hospital, died on February 5th, aged twenty-five years.

WILLIAM CARSEN, M.D., aged eighty-five, one of the oldest physicians in New Orleans, is dead. He was a native of Ireland and a graduate of the Royal College of Surgeons in London.

A. J. BILLINGS, M.D., of Freedom, Me., died February 7th, at Belfast. He was seventy-four years of age, and had been active in public affairs for many years. He was State senator in 1866 and in 1897, and had served two terms as representative. He was a member of the Waldo County Medical Society and served in the Civil War.

F. H. PETTINGILL, M.D., of Saxton's River, Vt., died last week. He was born in Grafton, attended Middlebury College, served in the Civil War, studied medicine at the University of Vermont, after the war, graduating from the Harvard Medical School in 1868.

BOOKS AND PAMPHLETS RECEIVED.

The New England Anti-vivisection Society Monthly, February, 1900.

Dermatitis Gangrænosa Infantum. By H. Julson Lipes, M.D. Reprint. 1900.

A Case of Primary Tumor of the Optic Nerve. By F. Buller, Montreal, Can. 1899.

The Old New York Hospital: An Historical Sketch. By D. B. St. John Roosa. Reprint. 1900.

Rotators of the Femur and their Other Functions. By Eb. W. Thomas, M.D., Philadelphia. Reprint. 1899.

The Bubonic Plague. By Walter Wyman, Surgeon-General, Marine-Hospital Service. Washington. 1900.

The Operative Treatment of Uterine Fibroids. By F. A. Lockhart, M.B., C M. (Edin.). Reprint. 1899.

Experiments on Animals. By Stephen Paget. With an introduction by Lord Lister. London: T. Fisher Unwin.

Report of One Hundred Consecutive Cases of Cataract Extraction. By Samuel Theobald, M.D., Baltimore, Md. Reprint. 1899.

The Resuscitation of Animals "Poisoned" with Illuminating Gas: An Experimental Study. By Percival Walter Darrah, M.D. 1899.

On the Significance of Bovine Tuberculosis and Its Eradication and Prevention in Canada. By George Adami, M.A., M.D. Reprint. 1899.

On the Relation between Disease of the Kidney and Excretion of the Alloxuric Bodies. By C. F. Martin, B.A., M.D., Montreal, Can. Reprint. 1899.

Care and Treatment of Epileptics. By William Pryor Letchworth, LL.D. Illustrated. New York and London: G. Putnam's Sons. The Knickerbocker Press. 1900.

Enteroptosis and Its Relation to Functional Disturbances. A Case of Congenital Deficiency of Both Clavicles. By W. F. Hamilton, M.D., Montreal, Can. Reprints. 1899.

The Principles of Treatment and their Applicati ns in Practical Medicine. By J. Mitchell Bruce, M.A., M.D., F.R.C.P. Philadelphia and New York: Lea Bros. & Co. 1899.

The Nervous System of the Child: Its Growth and Health in Education. By Francis Warner, M.D. (Lond.). F.R.C.P., F.R.C.S. (Eng.). New York: The Macmillan Co. 1900.

A Consideration of the Various Forms of Non-malignant Ulceration of the Rectum. Some Practical Notes upon Diseases of the Rectum. By Lewis H. Adler, Jr., M.D., Philadelphia. Reprints. 1899.

E. Brissaud: Leçons sur les Maladies Nerveuses, Deuxième Série (Hôpital Saint-Antoine). Recuillies et publiées par Henri Meige. Avec 165 figures dans le texte. Paris: Masson et Cie, Editeurs. 1899.

Practical Text-Book of Midwifery for Nurses and Students. By Robert Jardine, M.D., M.R.C.S. (Eng.), F.F.P. and S. (Glasg.). Illustrated. New York: The Macmillan Co. Edinburgh: William F. Clay. 1899.

A Text-Book of Diseases of Women. By Charles B. Penrose, M.D., Ph.D., Professor of Gynecology in University of Pennsylvania. Illustrated, third edition, revised. Philadelphia: W. B. Saunders. 1900.

The Climate of Colorado for Respiratory Diseases. The Tuberculin Test, and the Need of a More Complete Diagnosis of Tuberculosis. By Charles Denison, A.M., M.D., Denver, Colo. Reprints. 1898-1900.

Imperative Surgery, for the General Practitioner, the Specialist and the Recent Graduate. By Howard Lilenthal, M.D. Illustrated. New York: The Macmillan Co. London: Macmillan & Co., Ltd. 1900.

The Municipal Control of Prostitution in the United States: Some Opinions as to Methods Adapted to Municipal Care and Control of Prostitution and Venereal Diseases. By Isadore Dyer, Ph.B. (Yale), M.D. Reprint. 1899.

Report on Observations made upon the Cattle at the Experimental Station at Outremont, P. Q., Recognized to be Tuberculous by the Tuberculin Test. By Prof. J. George Adami, M.A., M.D., and C. F. Martin, M.D. Ottawa. 1899.

A Text-Book of Embryology for Students of Medicine. By John Clement Heisler, M.D., Professor of Anatomy in the Medico-Chirurgical College. Philadelphia. With 190 illustrations, 26 of them in colors. Philadelphia: W. B. Saunders. 1899.

Manuel Pratique d'Hygiène à l'Usage des Médecins et des Etudiants. Par le Dr. Guiraud, Professeur d'Hygiène à la Faculté de Médecine de l'Université de Toulouse. Deuxième édition, revue et augmentée. Paris: G. Steinheil, Editeur. 1899.

Recherches sur les Matières Colorantes du Foie et de la Bile et sur le Fer Hépatique. Par MM. A. Dastre, Professeur de Physiologie a la Faculté des Sciences de Paris, et N. Floresco, Docteur ès-Sciences. Paris: G. Steinheil, Éditeur. 1899.

The American Year-Book of Medicine and Surgery: being a Yearly Digest of Scientific Progress and Authoritative Opinion in all Branches of Medicine and Surgery. By George M. Gould, M.D. In two volumes. Philadelphia: W. B. Saunders. 1900.

The Refraction of the Eye, including a Complete Treatise on Ophthalmometry, a Clinical Text-Book for Students and Practitioners. By A. Edward Davis, A.M., M.D. Illustrated. New York: The Macmillan Co. London: Macmillan & Co., Ltd. 1900.

The Treatment of Diseases of the Nervous System, a Manual for Practitioners. By Joseph Collins, M.D., Professor of Nervous and Mental Diseases in the New York Post-Graduate Medical School, etc. Illustrated. New York: William Wood & Co. 1900.

Pyorrhœa Alveolaris and its Relations to General Medicine. By John Fitzgerald, L.D.S., Dental Surgeon to the Italian Hospital and to the National Hospital for Diseases of the Heart and Paralysis, Soho Square. London: The Medical Publishing Co., Ltd. 1899.

Enlargement of the Prostate: Its Treatment and Radical Cure. By C. Mansell Moullin, M.D. (Oxon.), F.R.C.S., Surgeon and Lecturer on Surgery at the London Hospital, etc. Second edition. London: H. K. Lewis. Philadelphia: P. Blakiston's Son & Co. 1899.

Herman Ludwig Ferdinand von Helmholtz. By John Gray McKendrick, M.D., LL.D., F.R.S.S.L. and E., Professor of Physiology in the University of Glasgow and Fellow of the Royal College of Physicians of Edinburgh. New York: Longmans, Green & Co. 1899.

Diseases of Women: A Treatise on the Principles and Practice of Gynecology for Students and Practitioners. By E. C. Dudley, A.M., M.D., Professor of Gynecology, etc. Second edition, revised and enlarged. Illustrated. Philadelphia and New York: Lea Brothers & Co.

The Diseases of Children, Medical and Surgical. By Henry Ashby, M.D. (Lond.), F.R.C.P., and G. A. Wright, B.A., M.B. (Oxon.), F.R.C.S. (Eng.). Fourth edition, edited for American students by William Perry Northrup, A.M., M.D. London and Bombay: Longmans, Green & Co. 1900.

Manual of Clinical Chemistry. By Elias H. Bartley, B.S., M.D., Ph.G., Professor of Chemistry and Toxicology in the Long Island College Hospital; Dean and Professor of Organic Chemistry in the Brooklyn College of Pharmacy. Thirty-three illustrations. Philadelphia: P. Blakiston's Son & Co. 1899.

Raynaud's Disease (Local Syncope, Local Asphyxia, Symmetrical Gangrene), Its History, Causes, Symptoms, Morbid Relations, Pathology and Treatment. By Thomas Kirkpatrick Monro, M.A., M.D., Physician to the Glasgow Royal Infirmary; Examiner in the University of Glasgow. Glasgow: James Maclehose & Sons. 1899.

A Manual of Modern Surgery: An Exposition of the Accepted Doctrines and Approved Operative Procedures of the Present Time for the use of Students and Practitioners. By John B. Roberts, A.M., M.D., Professor of Anatomy and Surgery, etc. Second edition, revised and enlarged. Illustrated. Philadelphia and New York: Lea Brothers & Co.

Lea's Series of Pocket Text-Books. Practice of Medicine: A Manual for Students and Practitioners. By George E. Malsbary, M.D., Assistant to the Chair of Practice, Medical College of Ohio, University of Cincinnati, etc. Series edited by Bern B. Gallaudet, M.D. Illustrated with 45 engravings. Philadelphia and New York: Lea Brothers & Co. 1899.

A Compend of the Diseases of the Eye and Refraction, including Treatment and Surgery. By George M. Gould, A.M., M.D., formerly Ophthalmologist to the Philadelphia Hospital, etc., and Walter L. Pyle, A.M., M.D., Assistant Surgeon to Wills Eye Hospital, Philadelphia, etc. Second edition, revised and enlarged. Philadelphia: P. Blakiston's Son & Co. 1899.

Saunders' Question Compends, No. 3. Essentials of Anatomy, including the Anatomy of the Viscera arranged in the Form of Questions and Answers, prepared especially for Students of Medicine. By Charles B. Nancrede, M.D. Sixth edition, thoroughly revised by Fred J. Brockway, M.D., Assistant Demonstrator of Anatomy, Columbia University, New York. Philadelphia: W. B. Saunders. 1899.

The Treatment of Wounds, Its Principles and Practice, General and Special. By Lewis Stephen Pilcher, A.M., M.D., Surgeon to the Methodist Episcopal Hospital in New York; late Passed Assistant Surgeon, U. S. Navy; Fellow of the American Surgical Association; Member of the Brooklyn Surgical Society; Honorary Member of the New York Surgical Society. With 142 wood engravings. New York: William Wood & Co. 1898.

A Manual of the Practice of Medicine, prepared especially for Students. By A. A. Stevens, A.M., M.D., Professor of Pathology in the Woman's Medical College of Pennsylvania; Lecturer on Terminology and Instructor in Physical Diagnosis in University of Pennsylvania, etc. Fifth edition, revised and enlarged. Illustrated. Philadelphia: W. B. Saunders. 1899.

Lea's Series of Pocket Text-Books. Materia Medica, Therapeutics, Medical Pharmacy, Prescription Writing and Medical Latin, a Manual for Students and Practitioners. By William Schleif, Ph.G., M.D., Instructor in Pharmacy in the University of Pennsylvania. Series edited by Bern B. Gallaudet, M.D., Demonstrator of Anatomy and Instructor in Surgery, College of Physicians and Surgeons, New York, etc. Philadelphia and New York: Lea Brothers & Co. 1899.

Lea's Series of Pocket Text-Books. Diseases of Children: a Manual for Students and Practitioners. By George M. Tuttle, M.D., Attending Physician to St. Luke's Hospital, etc., St. Louis. Series edited by Bern B. Gallaudet, M.D., Demonstrator of Anatomy and Instructor in Surgery, College of Physicians and Surgeons, Columbia University, New York, etc. Illustrated with five plates in color and monochrome. Philadelphia and New York: Lea Brothers & Co. 1899.

Saunders' Pocket Medical Formulary, with an Appendix containing Posological Table; Formulæ and Doses for Hypodermic Medication; Poisons and their Antidotes; Diameters of the Female Pelvis and Fœtal Head; Obstetrical Table; Diet List for Various Diseases; Materials and Drugs used in Antiseptic Surgery, etc. By William M. Powell, M.D., author of "Essentials of Diseases of Children," etc. Fifth edition, thoroughly revised. Philadelphia: W. B. Saunders. 1899.

Text-Book of the Embryology of Invertebrates. By Dr. E. Korschelt, Professor of Zoölogy and Comparative Anatomy in the University of Marburg, and Dr. K. Heider, Professor of Zoölogy in the University of Berlin. Translated from the German by Matilda Bernard. Revised and edited with additional notes by Martin F. Woodward, Demonstrator of Zoölogy, Royal College of Science. Vols. II and III. London: Swan, Sonnenschein & Co., Ltd. New York: The Macmillan Co. 1899.

The Mineral Waters of the United States and their Therapeutic Uses, with an account of the Various Mineral Spring Localities, their Advantages as Health Resorts, Means of Access, etc., to which is added an Appendix on Potable Waters. By James K. Crook, A.M., M.D., Adjunct Professor of Clinical Medicine and Physical Diagnosis at the New York Post-Graduate Medical School; Attending Physician to the Post-Graduate Hospital, etc. New York and Philadelphia: Lea Brothers & Co. 1898.

Histology and Pathology, a Manual for Students and Practitioners. By John Benjamin Nichols, M.D., Demonstrator of Histology, Medical Department, Columbian University, Washington, D. C., and Frank Palmer Vale, M.D., Assistant in Pathology, University of Georgetown, Washington, D. C. Series edited by Bern B. Gallaudet, M.D., Demonstrator of Anatomy and Instructor in Surgery, College of Physicians and Surgeons, New York, etc. Illustrated. Philadelphia and New York: Lea Brothers & Co.

Holden's Human Osteology, comprising a Description of the Bones, with Delineations of the Attachments of the Muscles, the General and Microscopic Structure of Bone and its Development. Edited by Charles Stewart, F.R.S., Conservator of the Museum of the Royal College of Surgeons of England; Hunterian Professor of Comparative Anatomy and Physiology, Royal College of Surgeons of England, and R. W. Reid, M.D., F.R.C.S., Regius Professor of Anatomy in the University of Aberdeen. Eighth edition. London: J. & A. Churchill. Philadelphia: P. Blakiston's Son & Co. 1899.

A Manual of Diseases of the Nervous System. By Sir W. R. Gowers, M.D., F.R.C.P., F.R.S., Consulting Physician to University College Hospital; Physician to the National Hospital for the Paralyzed and Epileptic, Queen Square. Third edition, revised and enlarged. Edited by Sir W. R. Gowers and James Taylor, M.A., M.D., F.R.C.P., Senior Assistant Physician to the National Hospital for the Paralyzed and Epileptic, Queen Square; Physician to the Northeastern Hospital for Children and to the National Orthopedic Hospital. Vol. I. Diseases of the Nerves and Spinal Cord. With 192 illustrations. Philadelphia: P. Blakiston's Son & Co. 1899.

A Manual of Surgical Treatment. By W. Walton Cheyne, M.B., F.R.C.S., F.R.S., Professor of Surgery in King's College, London; Surgeon to King's College Hospital, the Children's Hospital, etc., and F. F. Burghard, M.D. and M.S. (Lond.), F.R.C.S., Teacher of Practical Surgery in King's College, London; Surgeon to King's College Hospital and the Children's Hospital, etc. In six volumes. Vol. I. The Treatment of General Surgical Diseases, including Inflammation, Suppuration, Ulceration, Gangrene, Wounds and their Complications, Infective Diseases and Tumors, the Administration of Anesthetics. By Dr. Silk. Vol. II. Philadelphia and New York: Lea Brothers & Co. 1899.

Original Articles.

THE UNITY OF THE ACUTE PSYCHOSES.[1]

BY PHILIP COOMBS KNAPP, A.M., M.D., BOSTON,
Clinical Instructor in Diseases of the Nervous System, Harvard Medical School; Physician for Diseases of the Nervous System, Boston City Hospital.

Some years ago I was called to see a young woman who had had a sudden nervous collapse one morning after breakfast. The history was unfortunately only too common. She had always been in delicate health. The family history showed some slight neurotic tendencies. She herself had had lateral curvature of the spine, slight in degree, and not important except that it had been made the occasion for exhausting treatment. She was possessed of the New England conscience to a high degree, unsanctified by a keen sense of humor or the power of relaxation. For a number of years there had been a source of worry in her family life, and she had been studying hard, working late at night, neglecting her meals, and hurrying from one end of the town to the other to attend lectures, concerts or operas, or to study in the libraries. A slight uterine disturbance had led to needless gynecological interference, which had had a bad effect upon her morbid conscientiousness. As a result of it all she had become very nervous and sleepless and had suffered much from intense pain in the head and spine. A change was advised, but scarcely had she started on her travels when she collapsed. This was followed by a long period of exhaustion and a gradual restoration to health. For a considerable period she had been brought in contact with a member of her family who had presented certain nervous phenomena, which had not been understood by the family physician, and thus she had been led to dread for herself an attack of insanity, so that she had implored her family never to send her away to an asylum. In addition, she had become profoundly depressed, and had the dominant idea of suicide, which, to a person of her morbid conscientiousness, seemed a horrible sin. At times she had sat sad and motionless, refusing to speak or even to look at any one, answering in monosyllables only after a direct question had been put to her several times. With all this there were no delusions, no hallucinations, no mental impairment, no confusion, except for an hour or two one night just after her collapse, when she struggled silently to get out of bed during a period of intense headache.

I have briefly outlined the case, not because it is in any way remarkable or because it presents any special difficulties or obscurities, but simply because it serves to introduce a question in the way of diagnosis. Is it a case of neurasthenia or of melancholia? She was both neurasthenic and melancholy, but was the melancholy sufficient to warrant the diagnosis of acute melancholia, or was it merely the melancholy which so often accompanies neurasthenia? Such profound depression is, of course, rare in neurasthenia, but more than half the neurasthenics complain of depression, and very few are persistently cheerful. It would be tedious to rehearse cases to show that in neurasthenia we may have all degrees of depression, until we find it as pronounced as in this patient. That is a fact which every neurologist knows from his own experience. The only question is at what point to draw the line between the two. Having drawn the line, moreover, we must recognize all sorts of gradations in the degree of depression, blending almost imperceptibly into one another. The extremes may be clearly differentiated, but in this case, as in so many others, the line of demarcation is not sharp.

Whether this be melancholia or neurasthenia, however, we must admit that there are other cases of mental depression which differ markedly in their clinical aspect from this. I need not cite now illustrative cases of melancholia with stupor, where there are marked mental confusion, hallucinations, and mental impairment, with a comparatively sudden onset, and without so many profound neurasthenic symptoms; nor need I cite any illustrative cases of melancholia with systematized delusions, chronic course, active hallucinations, and slight mental impairment. Both types are familiar, and they differ fundamentally from the case I have already referred to. This case, as I have said, bears a close resemblance to cases of neurasthenia, while melancholia with systematized delusions bears an equally close relation to paranoia, and the melancholia with stupor stands in a third class, differing markedly from the other two. Are these three types one and the same disease, characterized by the affective state depression, or is depression merely a symptom, occurring in a variety of diseases? The latter seems the more rational answer. Melancholy is an affective state, which is the normal result of certain conditions. If a man knows that he is suffering from an incurable disease, that he has lost his property, that he has incurred disgrace, that he has lost those near and dear to him, he becomes naturally and inevitably depressed. If, owing to false information, he believes that these things have happened, he becomes equally depressed. If, owing to insane delusions, he believes that these things have happened, he still becomes equally depressed. The affective state is the result of certain pre-existing ideas; it is not necessarily a disease by itself.

The same may be said of the states of excitement so often seen. In many cases they are but the natural actions of the patient produced by his morbid ideas or delusions. If a man be exposed to imminent danger, he will assault the man who prevents his escape; if he be a king, he will punish the man who does not pay him due deference; he will behave in the same manner if he believes these things, even if his beliefs be unfounded or part of an insane delusion. There is much truth in Alt's recent assertion[2] that violent mania is an artefact, due to psychical sepsis in the hospital; that is, to defective management and unskilful treatment.

The idea that melancholia, one of the oldest recognized types of mental disease, which in the days of Robert Burton was regarded as one of the commonest and most universal forms of disease, is not a pathological entity, but an affective state occurring in several forms of disease, indicates something of the revolution that is taking place and the confusion that exists in our conceptions of mental disease. Mania, that other time-honored type, occupies a still more uncertain place. In spite of the frequency with which mania is diagnosticated in this country, as shown by asylum statistics, a large number of modern writers regard it as rare, and many question its existence. A similar contest is going on with regard to katatonia, whether

[1] Read before the American Neurological Association, June, 1899.

[2] Monatsschrift für Psychiatrie, June, 1897.

it is a disease by itself or merely a symptom complex. One school vigorously upholds the existence of an acute paranoia, whose existence is denied by another school. In the whole field of the acute psychoses there is questioning and uncertainty. If we compare the modern treatises on mental disease, excluding of course those which are merely imitations of some original writer's work, we will find that no two of them agree in the diseases which they describe.[3] Each writer has his own list of diseases which he differentiates carefully from one another, and this list differs absolutely from the lists of other writers; but in no treatise on insanity are the distinguishing points as distinctive as could be desired, and nearly every writer admits that certain of his distinctive affections may sometimes be confounded.

This confusion is the natural result of the attempt to divide mental affections upon a symptomatic basis. Such a classification is, in certain states of our knowledge, inevitable, but eventually it must go the way of the etiological classifications. Even in diseases with definite physical symptoms such classifications are often misleading. Any man who has seen a dozen cases of brain tumor or tabes could divide them into several distinct types, if he were to classify according to their most striking symptoms. Of the three cardinal symptoms of tabes — lancinating pains, loss of knee-jerk and Argyll-Robertson pupil — only one is complained of by the patient, and the other two can be detected only by expert examination. Ataxia, gastric crises, blindness, joint affections, which may dominate the clinical picture, may all be absent. In the one form of mental disease, concerning which there is general agreement and which is described in substantially the same way and under the same name by every author, namely, general paralysis, — the clinical symptoms may vary widely, and, were we to classify by these alone, every man could describe a dozen different types from his own case books. If so many types may be distinguished when the symptoms are chiefly physical, may not as many and as unwarranted types be created when the symptoms are of a complex psychical nature? The appalling list of the phobias shows the possibilities and the evil of such classification.

This fallacy has been well brought out by Kraepelin in his criticism of the attempt to establish an acute paranoia, and especially of Ziehen's distinction between the simple and the hallucinatory forms. "In this," he says,[4] "we meet with the plainest indication of the essential failure of our clinical psychiatry in the last decade, the purely symptomatic division of forms of disease resting upon *a priori* presumptions. The distinction which is regarded as fundamental between the disturbances of intellect and those of feeling is only psychological, not at all clinical. In actual disease types we see both tied up together in a wholly indistinguishable way. If this be not plain, try to group cases universally recognized as general paralysis according to the primary or secondary development of delusions. This plain example, from which the clinical comprehension of psychical disturbances will never learn anything, shows more than sufficiently that delusions and hallucinations are as inessential for the characterization of a clinical type as the appearance of depression or excitement. . . . In fact, the attempt thus far made to arrange the paranoia group by itself and separate it from other forms of insanity has invariably ended with the confession that mixed forms and transition forms predominate over the regular forms themselves and even run into the affective mental disturbances which are supposed to be essentially different. Thus the only basis of the present conception of paranoia, the artificial distinction between diseases of the intellect and diseases of the affective sphere, falls to pieces. There is no doubt that the hopelessness of coming to any clear conclusions in this way must bear a great part of the blame for the general repugnance toward the study of clinical psychiatric questions." A sound criticism, which Kraepelin himself has unfortunately not followed. General paralysis itself may present every important symptom in the entire list of psychiatric semeiology, depression, excitement, confusion, delusions, hallucinations, dementia.

The almost hopeless confusion which the effort to reconcile various opinions in regard to the so-called acute psychoses produces may naturally lead us to consider, if not to take refuge, in alcohol. The pathological changes produced in the cortical nerve cells by alcohol have, of late years, been carefully studied, and it is recognized that alcoholic poisoning causes degenerative changes in the cortical cell. In acute alcoholic poisoning, however, in the "simple drunk," we are familiar with various mental states. The intoxicated man may be verbose, jocose, lachrymose, morose, bellicose, or comatose. The mental conditions due to chronic alcoholic poisoning are also of various types. One of the most familiar forms is, of course, the ordinary delirium tremens, — an acute hallucinatory delirium with ideas of persecution, of short duration and often terminating fatally; a condition which, clinically, is not unlike acute delirium.

A short time ago I saw on the same day two patients who presented two other familiar types of mental disturbance due to alcohol. One was a young man of thirty-two who, for ten or twelve years, had indulged in alcohol to excess. The family history and previous history were not remarkable. Three months

[3] I have cited from a few writers the various affections they describe which might fairly be classed among the acute psychoses. Ballet and Meynert do not give any complete classification. The various types are described under sixty-six different names:

Clouston: Simple melancholia, hypochondriacal melancholia, delusional melancholia, excited melancholia, resistive melancholia, convulsive melancholia, organic melancholia, suicidal and homicidal melancholia, simple mania, acute mania, delusional mania, ephemeral mania, homicidal mania, katatonia, melancholia attonita, primary dementia, 16.

Bevan Lewis: Depression, stupor, exaltation, fulminating psychoses, alcoholic insanity, insanity of puberty and adolescence, puerperal insanity, confusional insanity, climacteric insanity, 9.

Spitzka: Mania, melancholia, katatonia, transitory frenzy, stuporous insanity, primary confusional insanity, delirium grave, alcoholic insanity, 8.

Ballet: Mania, melancholia, confusion, acute delirium, 4.

Korkhoff: Melancholia, mania, acute paranoia, confusion, primary dementia, toxic insanity, 6.

Kraepelin: Collapse delirium, acute confusion, acute dementia, febrile delirium, toxic delirium, dementia præcox, katatonia, dementia paranoides, melancholia, 9.

Krafft-Ebing: Melancholia, passive melancholia, melancholia attonita, mania, frenzy, stupidity, 6.

Meynert: Melancholia, amentia, mania, 3.

Schüle: Melancholia, mania, severe mania, acute dementia, insanity of severe disease or intoxication, acute delirium, 6.

Ziehen: Mania, melancholia, stupidity, acute hallucinatory paranoia, acute simple paranoia, post-maniacal and post-melancholy stupor, post-neurasthenic hypochondriacal melancholia and paranoia, post-melancholic hypochondriacal paranoia, katatonia, alcoholic dementia, 12.

Apostoli: Mania, simple melancholia with delirium, agitated melancholia, melancholia attonita, confusional amentia, stuporous amentia, acute delirium, syphilitic psychoses, pellagrous psychoses, alcoholic psychoses, morphinism, etc., katatonia, 13.

Morselli: Hebephrenia, climacteric insanity, simple mania, grave mania, simple melancholia, grave melancholia, stupidity, katatonia, acute delirium, toxic insanities, 10.

International: Acute mania, puerperal mania, acute melancholia, puerperal melancholia, primary dementia, toxic insanity, 6.

[4] Kraepelin: Psychiatrie, 5te Aufl., p. 655.

before he had had a light attack of "the horrors," lasting about a week; since that time he had had the delusion that his enemies were influencing him with an electric machine; that he could hear them talking about him, threatening to arrest and kill him. They knew his thoughts and everything which he did. Certain muscular twitchings, due perhaps to a very slight neuritis, were interpreted as taps from the electric influences; after which he heard his own name and the names of his enemies spoken. His enemies repeated everything he thought and told him they would kill him with electricity. Their suggestions were often indecent. He never had any hallucinations of sight. At times he recognized the voices as false, but more frequently they were real. In consequence of his persecutions he was depressed, irritable and unable to keep his mind upon his business, but there was no failure of memory or judgment, no confusion and no other mental impairment. After three weeks of total abstinence the delusions and hallucinations were much diminished.

On the same day I saw a woman of forty-four, possibly approaching the menopause, who had indulged very freely in alcohol. For three weeks she had had some bronchitis, with digestive disturbance and elevation of temperature, for which she entered the hospital. She was found to be very weak and tremulous and somewhat delirious, getting out of bed frequently at night, but never becoming especially violent. On account of her getting out of bed, restraint became necessary. On examination she was found to have a moderate degree of neuritis and to show very marked mental confusion and loss of memory. She gave the characteristic account of having made several visits to her friends outside during her two weeks' stay in the hospital, with circumstantial statements as to the events which had happened during those visits. There was much confusion as to dates and much of the time she was not certain where she was. After total abstinence from alcohol she improved so much that in the course of a month she was able to return to her friends.

In yet a fourth type, which is seen only in more advanced cases, there is still more marked dementia, great muscular weakness, more marked loss of memory and confusion, disturbances of speech and occasional convulsions, the whole suggesting general paralysis. The course is protracted, the prognosis grave and complete recovery is rare. In this last form we find edema and opacity of the pia, atrophy of the cortex and more marked atrophic changes in the cells and in the glia, the familiar "wet brain" of chronic alcoholism. Other forms might be described, and mixed and transition types exist.

In all these types of mental disturbance, — which clinically are distinct, if we disregard the transition forms, which spoil our classifications, — the etiology is the same, the anatomical changes differ only in degree, but the clinical aspect is widely different. Is it not fair to suppose, therefore, that the difference in the symptoms is due to the difference in the extent of the cortical changes or perhaps to a difference in their localization? In other diseases of the brain — hemorrhage, abscess, tumor — we know that the extent and location of the lesion are of much greater importance than the etiology or the precise anatomical nature. Is it not also probable that the different manifestations in general paralysis are dependent upon the extent and localization of the changes in the cortex, excepting, of course, those manifestations clearly referable to changes in the spinal cord? The paralyses and convulsions of general paralysis are probably to be referred to local changes, and although we cannot as yet accept Flechsig's speculation[2] that disturbances of personality are due to changes in the anterior association centre, the clinical differences in the mental symptoms of general paralysis are more satisfactorily explained by differences in the part of the cortex affected and by differences in the extent of the degeneration than by any other causes. At any rate, both in alcoholism and in general paralysis it seems safe to claim that the degree of the dementia is dependent upon the number of cortical neurones that are put out of function; the rapidity with which the dementia develops depends upon the rapidity with which these neurones are affected by the morbid process; and the permanence of the dementia depends upon whether the neurones are wholly destroyed or are capable of repair. The study of the pathological changes in the cortex in the early and late stages of general paralysis establishes this point beyond dispute.

Let us now consider for a few moments the so-called acute psychoses. What they are it is hard to say, since, as I have said, the list varies with each treatise on psychiatry consulted. They would include, however, many of the cases now classed as acute mania, acute melancholia, acute dementia, dementia precox, katatonia, acute delirium, acute paranoia and acute confusional insanity. The pathology of these conditions is defective, and any satisfactory pathology in mental disturbances is at present wholly impossible, yet, in a few instances, an acute degeneration of the cortical neurones, occasionally in the severer cases associated with proliferation of the glia, has been found. These changes are not unlike those produced by certain poisons, such as alcohol, or those produced as a result of acute infectious processes. In fact, it is generally admitted that, with our present methods of research, it is impossible to detect from the anatomical differences in the affected cortical cells whether the degeneration be due to alcohol, other poisons, acute infection or acute mental disease.

Clinically, these psychoses resemble each other in that they often seem to be produced by toxic causes, that they may affect the healthy brain, that they are of comparatively rapid onset and that they may run a tolerably acute course. Furthermore, one cause may produce several different clinical types of psychosis. I have already referred to some of the varying conditions, with probably a similar pathological basis, produced by alcohol — acute delirium, acute delusional insanity, an acute confusional condition, and a more marked and more chronic form of dementia. As a result of child-bearing, or more probably of the acute infection associated with the puerperal state, we see various types of puerperal psychosis — mania, melancholia, and the acute hallucinatory confusional insanity so often confounded with mania. Manifestations of febrile delirium, when not associated, as it so often is, with alcoholic poisoning, show a similar variety in the mental symptoms. All these psychoses, moreover, show certain likenesses in their course; they may vary, of course, in severity, but we must admit that in all the so-called types of mental disease to which I have referred, even in katatonia and acute delirium,

[2] Flechsig: Gehirn und Seele, 2te Aufl, p. 90.

recovery is possible. The cases which do not recover, however, either die of exhaustion, after a comparatively short illness, or they end in one of two ways — they either pass on to a more or less marked dementia or to a state associated with hallucinations and not very well systematized delusions, with considerable mental impairment. We may explain the course by imagining that the cell degeneration has in some cases been slight, and that a process of repair has followed, leading to a complete recovery. In other cases there may have been a sudden and widespread degeneration of many cortical cells, causing death; or there may have been a more complete degeneration of a greater or smaller number of cells, from which repair was impossible; and in case of the destruction of these cells, either mental impairment with delusions or a more complete dementia would be the inevitable result.

Many of these cases, if studied throughout their course, present various changes in their psychical manifestations. The old descriptions of mania and melancholia used to tell of the stages of depression or exaltation, respectively, preceding or following the period of excitement or depression that gave the name to the disease. This description may have been founded upon the cases of unrecognized circular insanity, but the fact remains that in so-called mania and melancholia, as well as in other affections, we may have various changes in the clinical picture —what Ziehen calls the polymorphous psychoses [6] which often present a course beginning with depression, going on to excitement, then confusion, and finally dementia. Other cases may begin with vague delusions of persecution and hallucinations, which may be permanent or go on to more marked confusion and considerable dementia, and yet make a good recovery. Often the depression or excitement is merely a secondary condition, the consequence of delusions, fancied ill-treatment, the bad effects of environment in the violent ward of an asylum, and the like. In a very large number of cases of acute psychoses recent studies have shown the existence of marked mental confusion, going on to stupor. Meynert's exhaustive study of acute hallucinatory insanity — amentia [7] — has caused an increasing tendency to put many cases under this one heading. It has absorbed many of the cases of acute mania, now regarded as a rare disease, it has taken in a few cases of melancholia, many of the cases of acute dementia and many of the cases of acute paranoia. Wernicke [8] has recently admitted frankly that the majority of the acute psychoses should be classed under this head.

The conclusions to which these various facts tend is that in these acute psychoses we have to do, not with a variety of different diseases, but, after all, with one single affection, whose anatomical basis may be an acute degeneration of the cortical neurones, and — if we adopt Wernicke's suggestion [9] (which seems to me the most sound one) that insanity is a disease of the association system — a degeneration which causes a greater loss of function in the association neurones of the cortex than in the neurones which belong to the projection system. This affection may vary in its severity and in its clinical manifestations. It is most frequently due to some toxic process (such as alcohol, post-infectious toxins, or perhaps autotoxins), or to exhaustion (toxins of fatigue). It is often attended at the onset with some febrile disturbance; a slight rise is not uncommon in milder cases, and a marked rise is the rule in delirium grave. Under certain conditions (perhaps a marked virulence or a very large dose of the poison) the symptoms are of sudden onset, with states of active delirium which may speedily cause death by exhaustion. Under ordinary conditions, states of confusion or hallucinatory delusion are produced, which may remain through the course of the disease or which may go on more or less rapidly to dementia. If the changes be not too complete and too extensive, recovery may ensue, or, in some cases, recovery with some persistent mental defect. The variation in the clinical picture is due to the varying extent and severity of the morbid changes or perhaps to a varying localization.

Two other factors may modify the picture. The first is the period of life, about which has been much written, chiefly with the end of establishing new diseases, such as hebephrenia or climacteric insanity. The other is degeneracy. That acute psychoses may occur in the degenerate is obvious, but little has been done toward the study of the question how far degeneracy may modify the symptoms of a psychosis. Agostini [10] is the only writer I recall who devotes a special chapter to the subject, based upon the researches of Magnan and Morselli. This is not surprising, for, with the confusion that prevails in the whole domain of the acute psychoses, any, even a slight, modification of the clinical type would probably be raised to the rank of an independent disease.

The periodic and circular forms of insanity add some support to the hypothesis advanced above. We may have a recurrence of the same clinical type — mania, melancholia, acute hallucinatory paranoia, acute simple paranoia — or we may have recurrence of different clinical types, usually mania and melancholia, but sometimes confusion or dementia. When the recurrence is in double form the two types do not necessarily alternate; there may be several attacks of excitement and then an attack of depression, as have been shown by some very interesting charts by Magnan [11] and confirmed by Ballet.[12] Of the pathogenesis of the periodic and circular forms of insanity we know nothing. If, however, the attacks be due to some agency of slow development, leading ultimately to an explosion, analogous to the epileptic attack, the same cause may produce excitement, confusion or hallucinatory delusions, according to the extent or location of the morbid changes.

Following out the hypothesis here advanced and returning to the case cited at the beginning of this paper, it seems justifiable to regard it as one of neurasthenia with marked depression; chronic delusional melancholia may be classed as paranoia, and melancholia with stupor as but one manifestation of this acute psychosis. Melancholia thus vanishes from our list of diseases, but the symptom melancholy remains, occurring in many affections and from varying causes, but secondary to pre-existing delusions or morbid ideas.

That such an hypothesis should be accepted, however, is hardly to be expected. That the etiological

[6] Ziehen: Psychiatrie, p. 198.
[7] Meynert: Klinische Vorlesungen über Psychiatrie, p. 33. Also Jahrbücher für Psychiatrie, ix, 1, 1889.
[8] Monatsschrift für Psychiatrie, May, 1899, p. 392.
[9] Wernicke: Grundriss der Psychiatrie, p. 5.
[10] Agostini: Manuale di Psichiatria, p. 214.
[11] Verhandl. d. X. Internat. med. Cong., iv, 14.
[12] Traité de Médecine, vi, 1124.

factors may vary, giving rise to variations in the clinical type, is possible, but an etiological classification can hardly be sustained at the present time. Multiple neuritis, for example, may rise from many different causes — lead, alcohol or diphtheria — and the clinical differences between lead neuritis, alcoholic neuritis, and diphtheritic neuritis are more striking than between Kraepelin's amentia and his acute dementia, or between Ziehen's acute hallucinatory and acute simple paranoia; yet we recognize practically one morbid anatomical change as the basis of the symptoms in all the different forms of neuritis, varying in extent and distribution and varying in severity. Clinically, of course, the acute psychoses may vary markedly; the typical cases of mania, hallucinatory confusion and dementia precox are strikingly different; but there are many transitional forms, so that a sharp line of demarcation between them does not exist. Clinically there is a striking contrast between the mute, drooling patient with bulbar paralysis, the upper face sad and intelligent the lower face expressionless and imbecile, and the loquacious patient with wasted, flail-like arms of ordinary, progressive muscular atrophy; yet most neurologists now regard the two as manifestations of the same morbid process, differing only in the localization of the lesion. We can hardly distinguish moreover by the clinical course of the disease; many of these patients, we know, become rapidly demented, others recover completely; some die of exhaustion, others remain hopelessly insane, victims of marked delusions, yet not markedly demented. A similar distinction can be made with other diseases. Some diphtheria patients hardly seem sick, some die of suffocation, others die of vagus paralysis, others recover, apparently, to suffer later from paralysis of the pharynx, eyes and limbs.

It is therefore no argument against regarding the acute psychoses as one affection to say that the causes vary; that some get well, others die of exhaustion, others become chronically insane, and others become demented; that individual cases differ clinically, some being excited, others depressed, others filled with delusions, and others demented; or to argue that cases presenting certain symptoms turn out worse than others which present other symptoms, just as diphtheria with laryngeal symptoms is more fatal than diphtheria without. All these conditions may be of service in establishing different diseases, but they are all of uncertain value and they may be fallacious. The trend of opinion during the last decade seems to be more and more in the direction of regarding the acute psychoses as one. Mania and melancholia still keep their old-time position in the text-books, but the very existence of mania is threatened and its rarity generally admitted, except in those hospital reports which find one case of paranoia and ten general paralytics in 4,000 admissions. Meynert's amentia is assuming more and more the chief place among the acute psychoses. The hypothesis of the essential unity of the various psychoses on a pathological basis of acute degenerative changes in the cortical cells seems the most plausible solution of the many difficulties and obscurities that enwrap the question, a solution which I believe will be strengthened by further study.

This hypothetical pathology affords, also, certain useful suggestions in the way of treatment. If the disorder be due to acute degenerative changes in the cortical neurones, the treatment would naturally be similar to that of other inflammatory disturbances in the brain — absolute rest, physical and mental, absence of noise, bright light and other mental stimuli, abundant feeding of not too stimulating a type, free elimination by the bowels and kidneys, and possibly in the more intense cases of toxic origin, bleeding, followed by saline injections. The benefits of the "bed treatment" of the acute psychoses are daily more and more recognized. To put such cases, dressed and on their feet, in the excited wards of an asylum is a tolerably wide departure from these principles of treatment. The results of home treatment, where isolation, rest in bed, absolute quiet and a sufficient nursing force can be obtained, show the superiority of such measures.

PSYCHOLOGY AND HEREDITY.[1]

BY ROBERT MACDOUGALL, PH.D., CAMBRIDGE, MASS.,
Instructor in Psychology, Harvard University.

It is commonly said that the great movement which resulted in the creation of our whole system of historical sciences had its origin last century in the work of certain German scholars who began to study the words of their mother tongue in a different way from that of earlier grammarians. These men applied to their problem a concept of great note in contemporary scientific discussion, namely, that of descent with cumulative modifications, and asserted that the verbal forms in use among a people at any given period could be intelligently understood only as parts of an historical process. There are many shades of meaning in the use of a single term, many analogies of use in terms having only the barest structural resemblance, many common elements in forms of widely varying application, which, taken as they stand, present a perplexing confusion of structure and of use. But to take them thus, said these scholars, is to cut out a fragment of tissue from its common body of life, to isolate an organ from the organism which gives it meaning, a process fatal to the purpose of one who seeks to understand assimilation or teleology. The living signification of the word can be understood only in its connection with the whole vital process of change in the language. Every variety of form and every shade of meaning is the result of a process of growth and a starting point for new development. No term is ever an isolated phenomenon springing up out of the void and arbitrarily affixed to a certain concept; each is a member of a genetic group, and by means of the material preserved in written records, they tell us, the scholar may go back to primitive root forms where these now widely separated variants unite in a single stem with some fundamental signification; and setting out from this point he may trace the family history downward to its latest descendants, observing the points of divergence where new forms and new uses of the form arise, and the process of cumulative differentiations by which new types are established, until the whole complex furniture of a modern civilized tongue is understood and accounted for under one or two simple concepts.

This new point of view, which created modern philology, was immensely fruitful, and in a series of brilliant and successful attempts was applied to a

[1] Read at the meeting of the Boston Society for Medical Improvement, December 4, 1899.

great variety of materials, with a result adequately expressed only in the total body of present historical knowledge; it created modern science. This is true in all but one particular, namely, that the point of view was not a new one. The historical method is basal in the work of one whole group of men whose functions are invested with a dignity and regarded with a gratitude not accorded to any other body of students; I refer to your own profession, gentlemen. The physician has been an evolutionist from the beginning. His work is a consistent endeavor to account for the present process of change in a diseased body as the outcome of definable preceding conditions, as intelligible only in the light of its own history. The explanation of the disease is resolved into a description of its origin and development. The physician regards the pathological condition as part of an orderly natural process, as over against those theologians who conceive it under the absolutely non-historical concept of a spiritual discipline or punishment for sin. You, then, after a fashion, have led the way in the application of the concept of historical development to the explanation of natural phenomena, and you are continuously and vitally interested, as a matter of practical import if not from a theoretical point of view, in the problems of fixity and variation of type, of heredity and acquisition, which are still so eagerly debated by opposing schools, and which we are met to consider here to-night.

The problem is one of origins. Every existing organism presents certain relatively permanent structural forms and characteristic ways of acting, and the work of the historical student is "to probe the dark backward and abysm of time," and trace out the conditions under which they were acquired and the factors which contributed to their development. In the course of this investigation, when a certain complexity of structure has been reached, relative interruptions are found to occur in the continuity of these conditions, breaking up the vital series into successive groups. In the simplest forms of life these nodal points are much more obscure; the unitary cell propagates by simple division of its protoplasmic matter, the independent life of each part having direct physical continuity with that of the original undivided cell; the ameboid organism on reaching a certain limit of increase in mass divides and becomes two individuals, each of which has indeed lost weight as compared with the initial cell group, but is materially as well as functionally identical with it; the same holds true of all those primitive forms of life which reproduce their species by any form of budding.[3] Both in the proliferation process of the cell and in the propagation of these multicellular protozoa, there exists a direct physical immortality which renders it misleading to speak of heredity as a source of individual variations. The physical continuity of the individual, as distinguished from that of its somatic units, is maintained from generation (admit the term) to generation, and the changes which take place must be viewed as occurring within the life of the organism, whether they result from the reactions which it makes upon its environment or derive from those unknown sources which, for lack of a descriptive term, have been called the *region of spontaneous variations*. In these primitive types of life the Lamarckian law is dominant, for each individual inherits by direct appropriation the characteristics acquired during presegmentational periods.

But when we pass from such simple creatures to those more highly organized forms in which reproduction is sexual, the process, though still of the proliferation type, and maintaining a certain physical immortality, becomes exceedingly elaborate and complex. The successive stages of the individual are exceedingly unlike each other, presenting in the highest types such contrasts as that of the mature human organism with the simple protoplasmic cell from which it has been developed. In these types, moreover, very much of the final structural form, and indirectly therefore of the functional activities as well, is due to some kind of prepotency in the contribution of the original germ cell, — call it the formula of its assimilative activity, or what you will, — and not to the surrounding conditions under which the individual develops. It therefore becomes a matter of pressing theoretical importance, as well as of practical value, to keep these two factors of determination distinct from each other, and to delimit their provinces in the development of the concrete life of the individual.[3]

Some of these characteristics are manifestly acquired by the organism within its own individual life, such as the ability to speak or write a particular language, the roughened hands and knotted muscles of the field laborer, the chronic indigestion resulting from a diet of fatty and starchy substances, or the groups of associated ideas which form one's knowledge regarding any special topic; others are as clearly traceable to the pre-existing assimilative type of the germ cell itself, of which nature are the general body plan and the conformation of its constituent organs, coloration of the skin, facial angles, pigmentation of the eyes and hair, and the like; while a third ill-defined group of elements presents such obscurity of origin that its sources form the debatable ground of science. The problem, then, is to trace out, both on the side of the physical organism and on that of the subject of consciousness, the elements due to inheritance of ancestral traits on the one hand, and to the direct influence of the environment acting within the limits of the individual life on the other.[4]

But it is not enough simply to account for the structure of the existing organism by referring each of its elements to one or two sources, its heredity or its environment; account must be taken also of the fact that cumulative variations exist. By heredity is meant the reappearance in the offspring of the characteristics, physical or mental, of the parent. If, then, the environment change, the plastic individual will vary in so far as the new conditions require a different adaptation from that demanded of the parent, but every generation will present the same material upon which the pressure of life conditions is to be exerted. This is not found to be the case; the curve of adaptation mounts more rapidly than the immediate influence of the environment working upon an unmodified material will account for. Heredity is not fixed; the type changes as well as the individual. There is, therefore, a third factor to be considered, namely, the appearance and inheritance of adaptive variations.

The question, then, is of the origin of variations, concerning which two possible sources have been pointed out: firstly, it is said the progressive change

[3] L. Landois: Human Physiology, p. 893, ff.

[3] For general formulation see Brooks: The Laws of Heredity, 18 3.

[4] American Text-Book of Physiology: W. H. Howell (Editor), p. 931, ff.

arises from the process of adaptation itself — the theory of the inheritance of acquired characteristics; and secondly, that it springs out of the dark — the theory of spontaneous variations. The first view is based upon the very manifest fact of adaptation within the individual life. As in the psychological world every experience leaves its mark behind it and the residual traces of all previous experiences enter into and determine the character of the present event, so the results of the life experience of past individuals enter into and determine the nature of their offspring. The effect of this past experience was represented in an adaptation to the environment. Therefore to the acquired aptitudes of the individual are to be added the inherited results of the adaptation of preceding individuals. The process is a cumulative one expressed in a racial adjustment in the form of an accelerated curve. This is the popular view. There is an almost fatal facility about its application. It *ought* to be so; practical postulates assert it; the whole common range of our moral education assumes its validity. The evidence, at first sight, is enormously in its favor; practically no variation can be pointed to which it can not be made to cover.

The contrasted view [5] holds that acquirement is essentially a transient phenomenon, *intra-vital*, not *inter-vital*, affecting the individual only, not the race. The stock remains throughout uninfluenced by the acquired adaptations of the individual. Another source of variations must be sought. But there is none; heredity is the element of fixity, and all other real factors in the constitution of the individual are included under the term "environment." Variations, however, do appear. Whence? Out of the dark; they cannot be connected with any known sources, though favorable or unfavorable conditions for their appearance may be discovered. They are of the nature of sports or freaks and are hence called *spontaneous*. The phenomenon is an inter-vital one, the divergence from the ancestral type on the part of the offspring being independent of the acquired characteristics of the parents. The environment then acts simply as a selective agency, eliminating some and preserving others according as the sum of their variations renders them more or less fit to meet the conditions of life imposed upon the species.

Such a theory has to meet the very great difficulty that these spontaneous variations simulate completely the results of an inheritance of acquired characteristics. The trend of evolution being determined by the selective environment, the kind of spontaneous variations preserved by it are just such as would accumulate through the inheritance of training effects. The rudimentary wings of certain birds and insects native in the Oceanic islands is a case in point.[6] Circumscribed in the range of their feeding grounds, unpersecuted by enemies and relieved from long migratory flights, the whole set of conditions under which the individual lives tends toward a disuse of these organs, and the decreased length and shrunken muscles of the wings are just such as would be brought about by the inheritance of those atrophic conditions which are found to result within the life of the individual from non-use of an organ. But these same environing conditions acting purely as a selective agency upon variations spontaneously arising would tend toward the production of the same type through — to indicate one influence only — the destruction of such individuals as were led by their more developed wings into attempted migrations, or flights which brought them into the track of storms upon the open sea. The same ambiguity of evidence exists in regard to the thickened legs of domestic fowls, the shortened feet of pigeons, the blindness of cave animals, and a multitude of other facts [7] including the traditional instance of use-inheritance in certain professional aptitudes and sensory divergencies characteristic of those engaged in hereditary crafts and occupations.[8] A decisive argument in favor of the theory of sports would be afforded by instances in which the emergent variation was useless, clearly dissociated from the whole stream of life-serving activities in the individual and the race. The esthetic sense has been cited to this end, but its evidence is manifestly irrelevant, if for no other reason than its importance for sexual selection. The strongest argument in rebuttal of use-inheritance is perhaps the case of special adaptations in neuter insects, where there is no possibility of the transmission of characteristics acquired within the life of the individual, since the variety is a non-sexual, infertile one, from which the very fact of propagation is absent. Yet even for these staggering objections the Lamarckian finds a reply, and for the anomalous facts a place within his formula in the theory that the neuter insect is not a form in process of change, but a static type, originally produced through use-inheritance during a preneuter period, when transmission was an actual fact, and that further specialization ceased with the advent of infertility. Neuterness is interpreted as the last variation to appear, not a condition under which the adaptive changes themselves arose. The same difficulties thus lie in the way of those who deny and those who affirm use-inheritance, so that Weissmann admits that the whole force of his argument rests on the logical consistency of the hypothesis and not on any direct indubitable evidence.[9]

The appeal to residual structures and rudimentary functions, then, results only in a determination of the hereditary origin of these organs and activities in contrast with an acquisition within the life of the individual through his own purposeful reactions. Their presence has been of the utmost significance in establishing the fact of organic evolution and in tracing out the genetic connection of existing species,[10] but no light is thereby thrown upon the nature of their origin. Yet though ineffective for the solution of these contemporary problems of biologic evolution, such phenomena are of decided interest and importance for a study of the processes involved in the evolution of consciousness, for here our knowledge is at a stage where the inquiry still centres upon the relative importance of the two factors as *veræ causæ* and is concerned with the delimitation of the provinces of heredity and of acquisition.

The problems which this field of investigation pre-

[5] A. Weissmann: (1) Essays upon Heredity and Kindred Biological Problems (Transl.), I, 1889, II, 1892; (2) The Germ Plasm (Transl.), 1893; (3) The Effect of External Influences upon Development (Transl.), 1894.

[6] Darwin: Origin of Species, chap. v, p. 128. W. P. Ball: Effects of Use and Disuse, p. 49, ff.

[7] Darwin: Variation of Animals and Plants under Domestication (various places).

[8] Darwin: Descent of Man, p. 33.

[9] A. Weissmann: The All-Sufficiency of Natural Selection, Contemporary Review, August, April, 1893. "It is the only conceivable natural explanation of organisms regarded as adaptations to conditions." See also H. Spencer: The Insufficiency of Natural Selection, Contemporary Review, February, March, May, December, 1893; and his admission of insufficiency of evidence in Factors of Organic Evolution, pp. 24-28.

[10] Romanes: Evidences of Organic Evolution (various places).

sents are analogous to those of organic evolution, and the same methods are applied in both lines of inquiry. We seek to describe and account for the present concrete fact of individual conscious life. Leaving out of consideration the non-historical and unscientific category of miraculous gifts and divine revelation, the existing characteristics are referable to one of two sources: (1) the direct influence of the conditions under which the life is carried on; and (2) the inheritance by physical transmission of ancestral traits. I say inheritance *by physical transmission* because we shall find that mental inheritance of another kind exists as a *vera causa* of immense significance, and because the relation between the physical and mental aspects of development is a close but not complete parallelism. At a certain point in physical evolution, apparently as the concomitant of a particular complexity of structure, arises the phenomenon of consciousness. The determination of this point may be in dispute, but however decided, whether on the basis of the presence of that specific form known as a nervous system, or of the functions of assimilation and movement, from the point which marks that appearance onward through its whole range from the crudest sentience of ameboid life to the complex consciousness of humanity, the development has been a parallel one. In so far as mental life is conditioned directly on the presence of an inherited physical organism its character is predetermined. Our bodies are the same in all their main outlines as those of our forefathers; eyes, ears, skin and muscles are repeated, and our field of consciousness must therefore be one of visual, auditory and tactual perceptions and of motor reactions. Kind reproduces after its kind; our world is not that of the microscopic-eyed insect or the telescopic-eyed vulture; nor do we fly in the air, nor breathe the water, nor burrow, nor hibernate. The physical organism, that is, presents through successive generations a stable type of perceptive and reactive apparatus and therefore directly conditions the sensory material assimilated in the process of consciousness and the motor experiences in which its outgoing impulses are expressed.

Even this statement must be qualified. The *objects* of our world of consciousness are not given; what the inherited nervous structure makes possible is only the experience of pure sense qualities, red, hot, rough, sour and the like. The object must be constructed out of successive experiences through the co-operation of various sensory and motor elements. The fundamentally important fact in the world of our perceptive consciousness is this, that many elements of sense experience fuse together in the unity of one object perception. What is seen, felt or heard is not so much the sensation immediately present as the object of which it gives awareness. Perception, then, is not a primary function of the inherited structure; what is transmitted is a mere capacity for sensory stimulation whose mental coefficient presents a chaos of elements which are wrought up by the activity of consciousness into the syntheses of perception.[11]

There is, however, a region of obscurity, as in the case of organic evolution, in which complex emotional processes and teleological attitudes are presented whose origin is still a debatable ground. Such are the so-called expressions of certain primitive moods of feeling, the frown of anger, the sneer of dislike and contempt, the kiss of affection, which are interpreted on the one hand as a true expressive mechanism whose *raison d'être* is to make "manifest in the flesh" and communicable these qualitatively varying mental states; while on the other they are regarded as the residues of once useful reactions now fallen into desuetude; the frown prevents congestion of the optic blood-vessels during the anger fit, the sneer is an incipient unfleshing of the teeth for coming battle, the kiss is a rarefied essence of a smacking of the lips which accompanied a far different treatment of its object from that which the kiss now implies.

Among such complexes of emotional and active attitudes we should expect the clearest evidence of inherited structure in those which are not correlated with any practical end, for wherever the feeling or action is such as the conditions of life themselves would naturally call into being, the old insurmountable ambiguity returns that the action of a selective environment upon variations spontaneously arising tends to the preservation of exactly the same kinds of activity as would be fostered in the process of individual adaptation to such an environment. For example, the complicated motor processes involved in walking have been interpreted as due not to a process of learning on the part of the child, but to a series of changes within the brain substance, independent of the environment, and of the nature of a ripening process. It would follow upon this that in the case of two infants manifesting simultaneously the first signs of reactional irritability to stimulation from contact between the soles of the feet and the earth, if one were artificially prevented from carrying out the motor impulse in actual attempts at walking, and so restrained during the whole period occupied by the other child in learning the function, it would be found at the end of that time as fully able as it to co-ordinate the motor impulses in the complex movements of walking.[12] The bodily organism has been carefully explored for such residual structures, and over two hundred rudimentary organs have been pointed out.

The muscles which control the movements of the ear, scalp and other portions of the skin of the body have so degenerated that in most human beings they are incapable of reacting, and in all they have ceased to be employed for the dislodgment of insect pests; while in the horse analogous muscles are used to sweep the flank or side clear of flies by one comprehensive vibration. The vermiform appendix, which in some animals forms an important member of the digestive system, is in man but a shrunken sac, notable only for the dangers which it holds for human life. The corner fold of the eye is a fragment of an apparatus identical with the nictitating membranes of birds, but now destitute of functioning power. The same holds true of the appearance of transient functions and also of the origin of many which are permanent. The probable dependence of the function of walking upon a ripening process in the brain centres is determined by the constitution of its inherited structure. To this may be added in further illustration the orderly representation in the development of voluntary movements within the individual human organism of successive phases of phylogenetic evolution. The earliest function of the fore-limbs in the development

[11] James: Principles of Psychology, vol. ii, chap. xix; Sully: The Human Mind, vol. i, 206, ff; Stout: Analytic Psychology vol. ii, p. 4, ff; or any standard book.

[12] James: Principles of Psychology, vol. ii, p. 406. Locomotion in calves, which begins within a few hours of birth, and in chicks follows at once upon their emergence from the shell, cannot be regarded as the result of a process of learning.

of life upon the earth was that of swimming; when a terrestial mode of existence supplanted the earlier aquatic life, a new application of these members was made in grasping, pulling and holding on, and latest of all arose those complex forms of manipulation, involving independent use of the various fingers and the opposition of the thumb. The same succession of function forms is now manifested in the infantile development of motor activities; swimming movements appear first, those of grasping and pulling follow, and not until much later are the fingers used for touching objects or does the hand begin to make those beautiful and elaborate adjustments characteristic of mature life.[18]

The phenomena of the mental world, on the other hand, have barely been scrutinized from this point of view. Yet these rudimentary organs and functions of the soul surely exist, the echoes of the long past, survivals of uncouth activities and strange ancestors,

"Whose distant footsteps echo
Down the corridors of Time."

We need a paleontology of the soul, tracing its progressive adjustment to the changing environment, the sloughing of old, the acquisition of new functions and sentiments, with its consequent explanation of atavistic tendencies and facts of reversion, instinctive impulses unintelligible to ourselves, automatisms which now appear as monstrous and inexplicable twists of our nature, and all the cumbering rubbish of ancient forms and activities which no longer fulfil any useful function, but which because they have so long been ours we cannot shake off.

The truancies of the child, insistent in the face of punishment, the unrest and aversion to settled modes of life which seize upon all of us at certain seasons, the curious impulses to vagrancy which appear at all ages and in all classes, driving their subjects forth into the wilderness, together with the whole tramp problem, point to the outcropping of some old migratory instinct in the human race whose purpose and even existence had been forgotten. Collecting manias of coins, stamps, hats, sticks, newspapers, and the like, and the various forms of pathological secretiveness met with among the insane, are interpretable as survivals from a period where the hoarding instinct was as important a function in the life of the human race as it now is in that of the squirrel and dog.

(To be continued.)

ON THE ADVISABILITY OF A MORE OR LESS GENERAL EXPLORATION OF THE ABDOMEN WHEN IT HAS BEEN OPENED FOR AN OPERATION.

BY JOHN HOMANS, M.D., BOSTON.,
Visiting Surgeon, Massachusetts General Hospital.

It has happened to me to discover very happily in several instances conditions and diseases entirely different from the one for which I had opened the abdomen, and it seems to me as wise as it is harmless to make a rapid examination of the abdominal organs other than those we are operating upon, when a favorable opportunity occurs. In this way I have three times removed gall-stones, whose presence was unsuspected, and whose removal did more for the patient's recovery and perfect subsequent health than did the removal of the tumor for which the abdomen was opened. I do not mean to recommend the lengthening of short incisions in order to explore. If the incision has been made an inch and a half long for an appendectomy, or for the removal of an ovarian tumor, or for an easy cholecystotomy, I would not lengthen it, but if we have removed a good-sized pelvic tumor, or a kidney, or for any purpose have made an opening sufficiently large to get the hand into the abdominal cavity, I think it is a good plan, particularly where there are any unexplained symptoms of pain and discomfort, to put in the hand and explore, particularly in the region of the gall-bladder, stones in which give rise to a great variety of symptoms and make life a burden.

So in regard to the appendix, which is often found diseased in connection with salpingitis and sometimes adherent to the tube. It is not always easy to say which of the organs was originally diseased, nor to decide whether the appendicitis follows the affection of the Fallopian tube or whether the Fallopian tube was infected by the appendix.

As illustrations of the wisdom of the course I have been advocating I will relate briefly the following cases:

Mrs. B., thirty-eight, emaciated and anxious looking, was sent to me by Dr. Spofford of Cavendish, Vt., in March, 1895. Her symptoms were nausea for last eight years at various times, she not being able to eat and retain solid food for eight months. She had become very thin and was suffering much from pain and backache, and felt as if a string were tightly tied around her waist; she stooped in walking and moved with much pain and difficulty. She has been treated in various hospitals during the past seventeen years and her pains and aches have been considered reflex from her diseased pelvic organs. She has had two children; the youngest was seventeen years old. Her uterus was retroverted and fixed, the tubes and ovaries were enlarged, prolapsed and adherent. Her catamenia had appeared once in the last fifteen months. Her body was covered more or less by spots caused by scratching, but no pediculi were found.

Her stomach was washed out daily by Dr. Pease and she improved somewhat; her vomiting became less frequent, but her backache and pelvic pain and tenderness continued. On April 6, 1895, with great difficulty, a left adherent tubo-ovarian cyst was dug out. The hemorrhage was so persistent that I thought of tying the internal iliac artery, but I finally clamped all the bleeding points with five long clamps, which I left in the abdomen with their handles outside the abdominal walls. I then inserted my hand through the wound and felt of the gall-bladder, which I found full of stones. The wound between the umbilicus and pubes was then sewed up around the clamp handles and another incision was made parallel with the cartilages of the ribs, over the gall-bladder. Ninety-seven gall-stones were then removed. She vomited incessantly for a week, then improved and went home at the end of five weeks perfectly well and able to eat anything. She grew fat and strong and continued comfortable for more than a year.

In December, 1896, her old symptoms of vomiting and pain had returned, and I opened the gall-bladder again and removed seven calculi, which had formed around pieces of silk which had united the gall-bladder

[18] A. A. Mumford: Survival Movements in Human Infancy, Brain, vol. 20, pp. 289-306 (1897).

to the peritoneum, just as alum crystallizes around a thread suspended in a hot saturated solution.

This case of recurrent gall-stones was published in the *Annals of Surgery*, with a colored plate showing the stones and ligatures, and was subsequently distributed as a reprint.

Mrs. M., forty-two years old, was brought to me in May, 1897, by Dr. Dibble, of St. Stephen, N. B. She had a lobulated abdominal tumor which was a sacculated right kidney filled with pus and calculi. This was removed by abdominal section and after its removal I inserted my hand and felt of the gall-bladder; it was full of stones. Without enlarging the incision the gall-bladder was opened and nine stones, varying in size from a No. 6 shot to a robin's egg, were removed. Another stone was impacted in the common duct but, after much manipulation, was finally worked up into the bladder. The remaining kidney worked beautifully, the wound healed by first intention except when the gall-bladder was draining, and the patient left the hospital perfectly well on the twenty-first day after the combined nephrectomy and cholecystotomy. Had I not made this manual exploration the patient would have gone home but half cured.

Mrs. D. was sent to me in March, 1899, by Dr. Witherlee of Castine, Maine. I found a fibroid tumor the size of a large orange, and to the irritation of this tumor was ascribed her digestive symptoms, which were quite severe. For three years she has been good for nothing and could hardly eat anything. Formerly she weighed 180 pounds and now weighs 124. On March 20, 1899, I removed the fibroid tumor, and then inserted my hand, passed it up to the hepatic region and found that the gall-bladder contained one large stone. The abdominal incision was lengthened upwards to a point two inches above the umbilicus, and the fundus of the gall-bladder was drawn through the wound and a stone one inch square was removed. The bladder was immediately sewn up and the wound closed without drainage. Her dyspeptic symptoms were much relieved by suggestions from Dr. E. G. Cutler, and she is now well and strong and can do and eat what she likes, and has nearly regained her former weight. Other cases could be cited, but it seems to me that those above narrated justify and, indeed, should compel exploration whenever feasible.

Clinical Department.

A CLINICAL STUDY OF HEROIN.

BY JAMES R. L. DALY, M.D.,
Resident Physician, Seton Hospital, Spuyten Duyvil, N. Y.

A NEW agent in the treatment of cough, at present in wide use and attracting considerable attention in the medical world, is heroin. It is a derivative of morphine — the diacetic acid ester — and is a white crystalline powder, almost insoluble in water, but readily soluble in water to which a few drops of acetic or hydrochloric acid have been added. It possesses many advantages over morphine as a respiratory sedative, among which the following may be mentioned: (1) It prolongs respiration, and at the same time increases the volume of each inspiration, making it a remedy much to be desired in the treatment of cough; (2) it is not a hypnotic; (3) absence of danger of acquiring the habit; (4) it does not weaken the respiratory apparatus; (5) it does not cause unpleasant disturbance of the stomach or intestines; (6) it can be prescribed in cases in which heart complications occur without risk of any deleterious effect upon that organ; (7) the ratio of the therapeutic dose to the toxic dose is considerably smaller than that of morphine.

The following cases, taken at random from a clinical field of over 100 cases of pulmonary tuberculosis in all stages of the disease in this hospital, will best serve to illustrate the efficacy of the drug:

CASE I. A. B., male, age thirty-two, clerk, entered hospital with history of pain in left side, which began about four months before admission; night sweats; hacking cough, most troublesome at night, with markedly diminished secretion, and slight dyspnea at varying intervals during day and night. Physical examination revealed consolidation of upper lobe on left side, and of apex on right side. Mist. codeia, one drachm, three times daily and at midnight was administered, and continued for two weeks, but with little result. At the end of this period the codeine was stopped and heroin substituted in doses of one-twelfth grain three times daily and at midnight. In four days the cough began to lose its hacking character, and the secretion became more abundant; in about one week the cough could only be observed in the morning and evening, and remained sufficiently loose to render the patient very comfortable. No dyspnea was observed a week after the heroin was begun and breathing still remained free. Mean respiration during first twenty days in hospital, A. M., 29; P. M., $29\frac{3}{5}$. Mean respiration for twenty days following the first administration of heroin, A. M., $24\frac{4}{5}$; P. M., $25\frac{1}{5}$. For the night sweats the patient was given a pill of zinc oxide, two grains, with extract belladonna, three-tenths grain, for three nights without result. On the third night heroin was substituted for codeine, and on the second night following the sweats ceased.

CASE II. On admission the patient complained of severe and painful cough throughout the day and night; expectoration scanty, and obtained only after considerable effort. Physical examination showed both lungs involved with cavity in right middle lobe. The patient was given heroin, one-twelfth grain, three times daily at first, and shortly after the dose was increased to one-sixth grain. After one week of heroin the cough was diminished to a marked extent, and the pain heretofore associated with the cough had disappeared.

CASE III. Patient entered hospital complaining of "smothering sensation" in chest, with slight pain. Heroin, one-twelfth grain, three times daily and at midnight was administered, and in three days this "smothering" had disappeared, but not permanently, as the patient has since complained of it; but he says that it is not as severe or as lasting as before he was put on heroin. Of course, the cough which was present was greatly loosened, and this it was that gave the patient relief.

CASE IV. Patient entered hospital complaining of hard, dry and persistent cough, most troublesome towards evening. Expectoration scanty, and effort of coughing caused great pain in chest. The patient was given heroin, one-twelfth grain, and in three days the cough became soft, and expectoration became quite free. The pain in the chest had, of course, dis-

appeared with the hard cough. The patient remained very comfortable for a month, when heroin was discontinued, because I believed it to be the cause of a certain heavy feeling of which he complained. The cough, however, again became severe and hard, and heroin was repeated in the same dose as before. In three days the patient was freed from the distressing cough, and that "heaviness" has not returned. Mean respiration during period in which the patient was taking heroin, A. M., 24; P. M., 26. Respiration became more rapid while the patient was without the drug, averaging, A. M., $25\frac{3}{4}$; P. M., $27\frac{1}{4}\frac{1}{4}$.

Case V. Patient has been in hospital for some time. Complained of severe cough beginning about midnight and lasting until morning. Heroin, one-sixth grain, was administered every night at 10.30. The cough was absent on second night that heroin was administered, and has not since distressed the patient.

Case VI. Patient complained of severe night sweats, and was given atropine, $\frac{1}{100}$ grain, for two nights without success; on the third night heroin, one-sixth grain, was given one-half hour after atropine, and sweats ceased.

Case VII. J. F., male, age thirty-two, laborer. If any case can be said to be a striking example of the efficacy of a remedy this case is certainly that one. The patient entered the hospital with very slight but hard cough and a history of marked and constant night sweats. The latter had inconvenienced the patient for seven weeks previous to entrance, without an intermission of a single night. Mist. codeia, one drachm, three times daily, was administered for the cough, and an attempt was at once made to check the night sweats. Camphoric acid had been a favorite with me in the treatment of this symptom, and I accordingly gave 20 grains at bedtime, and repeated the same dose for four succeeding nights, but without result. Then atropine sulph. and ac. sulphuric aromat. were tried in the proportion of one-fiftieth of the former and 10 minims of the latter, but again without a favorable result. This was given for five nights. Atropine sulph. alone was tried in dose of one-fiftieth grain for a week; still no response. Next was tried a pill of zinc oxide, two grains, and extract belladonna, three-tenths grain, for five nights, and this, like the rest, failed. Pilocarpine was next tried in dose of $\frac{1}{100}$ grain, but it only increased the sweating. Next in order came warm baths, and then bathing with ac. sulphuric dilute, but these met the same fate as all the preceding. Then I decided to give the sweat glands a rest, and for a week nothing was administered for the sweating, and at the end of this time atropine sulph. was repeated in dose of one-fiftieth grain, but without result, until about the fifth night of the administration of the latter the codeia mixture was discontinued and heroin substituted in dose of one-twelfth grain three times daily. On the third night of the administration of the latter the sweats decreased to a great extent, and on the fourth night ceased altogether. The heroin had replaced the codeia mist., not because of the sweating but because of the hard cough, which did not improve; and since the patient had been taking the former the cough has loosened considerably, and he now experiences marked relief. I regard this case as typical, not of the curative effect of heroin on the night sweats, but rather of the quality of the drug to assist the ordinary anhydrotics when, given alone, they fail.

Case VIII. Case of tubercular laryngitis. Patient complained of severe sore throat, which prevented deglutition. Pills of heroin, one-twelfth grain, were administered every three hours, and kept the throat in a condition of anesthesia for about one to two hours, rendering the patient fairly comfortable, and most of the time free from pain. It is unnecessary for me to mention that the patient was instructed to dissolve the pill slowly on his tongue. Two other marked cases of tubercular laryngitis were temporarily relieved by the administration of heroin in this manner.

These cases are fair samples of the results obtained by the administration of heroin. In almost every case in which it has been tried it has been of some service in the alleviation of cough, be that service ever so slight. Even the advanced cases have been to a certain extent relieved. I found, however, that the more favorable results were obtained in those cases in which the disease process had not advanced to too great an extent. In this class of cases the drug never failed to loosen a hard cough and produce free expectoration, giving marked relief from pain when present. I regard it as unequalled as a sedative in the treatment of cough of pulmonary tuberculosis, and venture to say, although I have not tested it in cases of cough in other pulmonary affections, that it will act equally well in such cases.

The smaller dose of one-twelfth grain is sufficient to afford relief in most cases, certainly in the milder or earlier ones, but in some instances it was found necessary to increase the dose to one-sixth grain, as after a time the smaller dose seemed to lose its effect upon the patient. Sometimes when heroin had been taken for a long time, it was found to be a good practice to stop it and give codeine, or some other sedative, for one week, and then renew the heroin at the end of this time. In this way the drug acted as well when renewed as in the beginning of the treatment. It is true, however, that heroin produces its effect for a much longer period than does any of the other sedatives used in this affection.

I said it was not a hypnotic, but the fact that it relieves the distressing cough which is often the cause of many sleepless nights, and thus ensures a natural sleep, obviating the necessity of using hypnotics, should not be overlooked.

I have very carefully watched the temperature charts for any evidence of its action as an antipyretic, but have been unable to find that it produces any effect whatever on the temperature. It certainly possesses no quality as a preventive or cure of the chills so persistently present in the later stages of tuberculosis. Like the respiration, the pulse is rendered fuller and slower. In 10 cases observed the mean pulse rate was reduced about four beats per minute; in one case the rate was reduced eight beats per minute. By its action upon respiration and its ability to relieve cough and promote excretion of secretory products, it manifests a decided effect upon the dyspnea.

I regard the influence of heroin on the night sweats as second only in importance to its influence as a sedative for the cough. In the cases cited its quality as an adjuvant to the ordinary remedies in checking the sweats is well marked. In six other cases favorable results were obtained in either checking or markedly decreasing the sweat by the administration of heroin in conjunction with one or another of the ordinary

anhydrotics. Its action in this particular is best appreciated after meeting failure in using the ordinary agent alone.

The cases of tubercular laryngitis mentioned are typical of its action as an analgesic in the treatment of the painful throats of this affection. In these cases it afforded considerable relief from pain for periods of about one to two hours following the administration of the pill.

In regard to its influence on respiration, I have carefully noted 19 cases, and have found that in each case the mean respiration A. M. and P. M. has been reduced from two to five, and in some cases as high as seven per minute.

No action on the intestines was observed, except, perhaps, a slight tendency to constipate if given in larger doses than one-twelfth grain. Of this, however, I will not be certain, as in the great majority of cases this action was not apparent. In some cases it has been noticed to cause a disturbance of the stomach. One patient complained that the drug caused considerable nausea shortly after taking, while with others the disturbance can best be described by using a term applied by a patient to the condition of his stomach after taking heroin — "squeamish." One complained of complete loss of appetite whenever he took the drug. In all, some disturbance was noted in five cases out of upwards of 70 patients taking the drug. I should add, however, that two of those who complained of disturbance of the stomach while taking heroin were later able to use it without noticing any ill effects. Another, and, in my opinion, the only real objection to heroin, is that in certain cases the larger dose of one-sixth grain was found to cause a feeling of heaviness during the day. To quote a patient, "I feel heavy and as though I want to sleep, but if I try to do so I find that I cannot." This was observed in four cases. The drug did not in any instance produce this effect when given in the smaller dose. But the chief use to which heroin can be put is as a sedative for the cough and to prevent the distressing and disagreeable stagnation of secretory products in the lungs, particularly in cases of pulmonary tuberculosis. No drug can compare with heroin in this particular. Cases that have come into the hospital with painful and almost constant cough, with inability to raise the sputum, resulting in fetid breath and more or less dyspnea, have been almost immediately relieved of pain, and the expectoration rendered freer, with decrease in the dyspnea, by the administration of heroin in doses of one-twelfth grain three times daily.

A CASE OF OLD SHOULDER DISLOCATION.

BY FRANK E. PECKHAM, M.D., PROVIDENCE, R. I.

THE subject of old dislocations of the shoulder joint has been thoroughly worked up by Dr. F. B. Lund, who found 24 cases up to 1897, treated at the Boston City Hospital. The oldest case was one of one and one-half years' duration, treated by open incision and resection of capsule. The following case was so interesting to me that I venture to report it quite fully.

The patient, a girl of sixteen years, fell down stairs July 10, 1897, striking on the right shoulder. At that time there was pain and disability, but the dislocation was not recognized and the treatment consisted of application of liniments, etc. Early in the year 1899 she was examined by a number of surgeons, all of whom advised against operation. In May, 1899, the patient came under my observation and care. At this time there was no motion in the joint, and the patient was able to do but very little work of any kind with her right arm, any attempt at using it causing considerable pain. I probably should not have operated, but the girl was extremely anxious to have something done, and her uncle and aunt, with whom she lived, also urgently solicited surgical interference; consequently, after having it distinctly understood that all that was promised was an "attempt" to do something, operation was undertaken. The reasons, therefore, for this operation were disability, pain when the arm was used very much and the demands of the patient and family that something be done. The disability was very marked; about all the girl could do was to wash dishes and this not very well, the motion being entirely scapular. A radiograph was obtained which showed a large gap below the acromion process, but whether a fracture existed could not be made out.

May 10, 1899, one year and ten months after the accident, operation was undertaken. Ether was the anesthetic, and the usual aseptic precautions were taken. The posterior surface of the shoulder was selected for the incision in order to avoid all difficulty with the large vessels and nerves. A circular flap was turned up, with its convexity downward exposing the muscles beneath. The deltoid, supraspinatus and teres minor muscles being divided, the capsule of the joint came immediately into view. This was stretched tightly downward, and on being divided the humeral head came into view just below the glenoid fossa, with the neck projecting diagonally forward, in a line perpendicularly downward from the coracoid process. The head of the humerus was attached to the neck of the scapula below the glenoid fossa, by what seemed to be bony tissue. This union was destroyed by chisel and mallet, and then the difficulty began. Finally, by a very broad and blunt periosteotome used as a lever under the anatomical neck and the assistant pushing up on the arm with all the force possible, it went into place. The shoulder was held in this position while capsule, divided muscles and the incision were sutured, dressing applied and shoulder bandaged with firm support under elbow.

After a few days, the shoulder was manipulated daily in order to preserve mobility if possible. This was done under chloroform two or three times, but motion gradually disappeared and all treatment ceased a little less than one month after operation, the head of the bone remaining firmly in its socket.

The three reasons for operation as stated above were disability, pain and the family demand. Treating these reasons in the reverse order, the family demands were satisfied. The pain has disappeared. The disability is much less with only scapular motion when the head of the bone is in its socket, than scapular motion with the humerus in the awkward position as described above. The patient can now not only wash dishes, but sweep, scrub floors, and, in fact, do about all the housework. Lastly, the patient and her family all feel that a great improvement has been obtained and are grateful for the relief.

Medical Progress.

REPORT ON DERMATOLOGY.

BY JOHN T. BOWEN, M.D., BOSTON.

ENDOTHELIOMATA OF THE SKIN.

Spiegler,[1] of Vienna, reports several interesting instances of cutaneous tumors, which were remarkable both from their clinical appearances and histological findings. Certainly the clinical appearances, judging from the illustrations and description of the first case particularly, were, as Spiegler says, uncommon and striking. The first case was that of a man of sixty-six years of age, with good family history, who dated the beginning of his affection nearly forty years before, and who ascribed its beginning to an injury which he had received on the scalp, a tumor appearing at the site of the wound. Others were gradually added to this in the vicinity. When seen, the patient presented an extraordinary appearance, the front and sides of the scalp and both temples being covered with about forty tumors, from the size of a bean to that of an orange, somewhat resembling billiard balls. They were of firm consistency, covered partly with thin, smooth, adherent skin, which was in places superficially excoriated and ulcerated, and although forming a sort of hood by their connection with one another at the base, there was no real confluence. Besides these tumors, there were some small tumors the size of a pea, situated at the edge of the hair on the forehead, which were covered by an elastic pouch of skin and resembled fibroma molluscum. On the back there was a tumor the size of the fist, as well as a number of small nodules. All the tumors were removed surgically, and the defect supplied by skin grafting. Pieces from eight different tumors were examined histologically and identical appearances found in each. The tumor was found to be made up of collections of cells surrounded by a capsule and arranged in circles, ovals or ribbons, which in places extended nearly to the epidermis. The masses of cells often contained cavities which were filled with a structureless, homogeneons substance, staining pale red with eosin. The connective tissue between the cell masses and ribbons showed in places large lymph vessels. The cells which formed the peripheral part of the nests and ribbons had their long axis in the direction of the radius of the plane, and were of an epithelial appearance, whereas the nuclei of the cells in the interior of the masses presented a smaller round or polygonal form, and were less easily stained and quite irregular in their arrangement. All of the masses were surrounded by a narrow seam of homogeneous substance. In certain places capillaries were found with thickened wall, from which projected outward large cylindrical cells, arranged perpendicularly to the cell wall.

The second case was that of a daughter of the one just described, forty-four years of age, who presented six tumors of the scalp from the size of a pea to that of a bean, and one upon the temporal region, one of which had existed for ten years. Histologically they were exactly like those of the first case.

In the third case, that of a woman of forty-four, very numerous, closely aggregated tumors from the size of a pea to that of a hazel nut, corresponding in appearance with those of the first case, covered the scalp, with bundles of short hair between the individual lesions. There were also a few tumors on the body. The same histological appearances were found in this case as in the two preceding.

On searching the literature, the writer has found several instances of tumors, affecting chiefly the scalp, where the clinical appearances closely resembled those of the three cases reported, and three of these are pictured in connection with his own cases. In one case, which is reproduced from Hutchinson's "Archives of Surgery," different individuals of the same family had been affected with tumors of the scalp, throughout three generations. In one case there was apparently a malignant change in the tumors.

Spiegler rejects the name perithelioma, proposed by Hildebrand and Kollaczek, and considers it was shown in his first case that the tumors were produced by a growth of the cells of the capillaries, the endothelial cells. They grow without further connection with the vessel wall, until they form the network of cell masses and ribbons. Therefore the name endothelioma is justified.

It is further remarked that it is curious in how many clinically different lesions these same histological appearances have been observed. Jarisch has maintained that the multiple benign epithelioma owes its origin to the growth of the endothelium of the vessels, and lesions similar to xanthoma planum, as well as a warty-looking tumor, have been found by Spiegler to possess this same histology. In conclusion, the fact that his first two cases were in father and daughter and that in Ancell's case tumors that were of presumably the same nature were observed in three generations in different members of the same family is adduced in support of an hereditary origin.

MALIGNANT TUMORS GROWING FROM SOFT NEVI.

Waelsch,[2] assistant at Pick's clinic in Prague, discusses the question of the relationship of tumors that grow from soft nevi, or "moles," to carcinoma. He relates the case of a woman of fifty-six years, who presented a tumor over the right shoulder blade that had made its appearance upon a nevus six months previously. She had lost much flesh and suffered from dizziness, headache and loss of appetite. The tumor was of moderately firm consistency, dark-blue color and fungous character, and in parts was ulcerated. About this tumor were a number of small nodules from the size of a pin's head to that of a pea. The glands upon the right side of the neck were enlarged, as were also the supraclavicular glands. In the left axilla was a large mass of enlarged glands. There were no symptoms that could be referred to the internal organs. During the patient's stay in the hospital the tumor increased in size and became more ulcerated, and the general cachexia increased. Histological examination showed that the tumor had its seat in the corium and consisted of round and elongated masses of cells which had every appearance of being derived from epithelial cells.

The second case was that of a man of forty, who had had on the skin of the abdomen a smooth dark brown spot for a great many years. A black verrucous growth had made its appearance here six months

[1] Spiegler: Archiv f. Derm. u. Syph., 18 9.

[2] Archiv f. derm. u. Syph., 1899.

ago, which had progressed to its present size. It was sharply bounded from the sound skin, and had a papillary appearance, with fissures. In the left inguinal region the glands were enlarged and fused together to form a tumor. The growth upon the abdomen, as well as the glandular tumor, was excised. The microscope showed in the former, nests of epithelial cells and enormous quantities of pigment, and in places a direct connection could be traced between the cells of the tumor and those of the overlying epidermis. No pathological changes were found in the lymphatic glands.

The third case concerned a man of thirty, and the tumor had gradually grown from a nevus of the skin of the breast within three months. It was a fungous-looking growth attached to the skin by a pedicle, ulcerated on the surface, surrounded by small satellite tumors resembling mulberries or raspberries. There was not much pigmentation except on incision, when one-half of the base was seen to be deep black. Microscopically about the same appearances were noted as in the preceding cases.

The conclusion is therefore reached that in these cases we have to do with epithelial neoplasms, which have developed from pre-existing cell deposits of an epithelial nature, and which, in the appearance and arrangement of their cell elements, observe a perfect identity with the pathological soil from which they have sprung. In this connection no attempt is made to deny the possibility of the existence of true alveolar sarcomata but to emphasize, with Unna and Hodara, that those malignant tumors of alveolar arrangement which develop from soft nevi are to be expelled from the sarcomata and classed with the epithelial neoplasms. It is further contended that these tumors developing from embryonic cells afford a further argument in favor of Cohnheim's view of the etiology of tumors in general.

A MANIFESTATION OF LEPROSY ON THE SCALP.

Morrow [3] speaks at the outset of the tendency of many dermatoses to select or to avoid certain localizations, and remarks that locality in this way furnishes often a valuable aid to diagnosis. Thus in the eruptive fevers, psoriasis and some forms of eczema much information may be offered from the seat of the affection. This is true also of leprosy in a marked degree. The tubercular forms of leprosy almost always make their first appearance on the face, hands or feet or about the ankles. The erythematous forms of tubercular leprosy are almost always transient in duration and often appear and disappear a number of times before the tubercular infiltration is produced. On the contrary, the erythematous appearances of the anesthetic form are usually permanent. The anterior surfaces of the body are usually the ones affected in the tubercular form, while the anesthetic affect the posterior surfaces. In a tubercular leper it will usually be found that the tubercles are most in evidence on the face, the front of the ears, the dorsum or forearms and hands, the anterolateral aspect of the thighs, the front of the knees and legs, and the dorsal aspect of the feet. In the anesthetic form the earlier spots may appear on the face and front and sides of the ankle, but later we find a predilection for the buttocks, the back of the shoulders, and the posterolateral aspects of the body generally.

[3] Journal of Cutaneous and Genito-Urinary Diseases, January, 1900.

No region of the body can be said to be absolutely free from leprous lesions, yet in contrast to the face and limbs the trunk is comparatively immune. Hutchinson has no examples of portraits of leprous lesions on the trunk, yet such cases occur in countries where the disease is endemic. The glans penis is usually spared, as well as the palms and soles, the region of the neck, and the temples. Almost all authorities state that the hairy scalp is absolutely free from lesions. There may be lesions on the face, forehead and at the roots of the hair, but here they cease, so that the hair of the head remains intact, while eyebrows and beard may have totally disappeared. Hebra and Vidal alone speak of the occurrence of tubercles and infiltrations on the hairy scalp as a great rarity.

Morrow relates the following case, where leprous manifestations occurred in this unusual locality: The patient was a man of forty-seven, born in Bermuda. He had been a sailor and had visited many different parts of the world. He had first noticed a spot on the middle of the forehead sixteen years ago. This had gradually spread downward over the nose, cheek and upper lip, and had involved, also, the forehead and hairy scalp. He had had peculiar stinging sensations in the face for years, and of late some numbness. The eyelashes had disappeared, but the eyebrows remained. On the left side of the scalp the patch extended backward behind the ear to a point half-way between the ear and the occiput. The margin of the patch was the seat of hyperpigmentation. There were also two circular patches as large as the palm, one on the left deltoid region, and one on the lateral surface of the left leg, of eighteen months' duration, and a circular patch on the right foot. He had had twitching of the muscles of the toes and loss of feeling in the instep for over a year. The peroneal and ulnar nerves were enlarged. He had had sensations of numbness in his fingers and arms.

EXANTHEMATA IN GONORRHEA.

Buschke,[4] Lesser's assistant in Berlin, has grouped together the various forms of cutaneous lesions that have been shown to accompany gonorrhea. He remarks that the whole question of metastases in this disease has been placed on a more stable footing since the gonococcus has been demonstrated in the metastatic foci, and it has been shown that severe endocarditis and severe and frequent joint affections are due to this cause. Bennecke has asserted that gonorrhea loses its simply local action much more easily than has been supposed, and that the micro-organisms, gaining access to the blood, are frequently the cause of metastatic complications. The manifestations on the side of the joints and tendons are the most frequent, next those of the heart, while those of the skin come last. Three cases are related, the first that of a man who developed in the course of a pretty chronic gonorrhea pain in various joints, with effusion and an endocarditis. At the same time there appeared an eruption which was made up of superficial lesions of an urticarial character, and deeper infiltrations, similar to erythema nodosum. There was also an enlargement of the spleen and a rise of temperature. These symptoms appeared and disappeared several times, and it was thought probable that a new infection of the urethra was continually occurring from the dis-

[4] Archiv f. Derm. u. Syph., May, 1899.

eased prostate. Although it was considered that the skin affection was due to the gonorrhea, and belonged with the other symptoms, it was admitted that a complication with erythema nodosum could not be absolutely ruled out.

In the second case, that of a woman, there was an acute gonorrhea of the urethra, cervix and rectum, with the formation of a gonorrheal fistula. There appeared, in the acute stage, effusion into the joints of the feet and inflammatory nodules in the skin, similar to erythema nodosum. In the course of the affection a dry pericarditis developed without fever.

The third case concerned an epileptic, who had been taking bromide of potash continually. In the course of a gonorrhea he developed painful nodules on the lower limbs accompanied by pains in the joints. The case is weakened perhaps by the fact that a drug capable of producing eruptions had been taken, but it is pointed out that the bromide rarely if ever produces this clinical form.

In none of these cases were gonococci found in the blood or in the skin lesions.

The eruptions that have been shown to follow gonorrhea may be divided into four groups, simple erythema, eruptions like that of erythema nodosum, hemorrhagic and bullous dermatoses, and excessive cornification.

(1) *Simple erythema.* — The greater number of observations deal with this type, and it is probable that some of them are due to the balsams that have been given. Other cases are cited to show that an acute scarlatiniform erythema may occur in the course of a gonorrhea, at a time when no balsamic drug has been administered, and that such drug may be given afterward, without producing any cutaneous manifestation. Such cases have induced some writers to believe that the greater part at least of the erythematous eruptions that have been attributed to the balsams are in reality produced by the gonorrheal infection. As a transitional form from the erythematous to the nodular, a case is related where in the course of a gonorrhea an eruption partly scarlatiniform and partly urticarial occurred, when there had been no medicine taken internally. The only other possibility was that the effect might have been produced by the injections of sublimate solutions.

(2) *Urticaria and erythema nodosum.* — In this class belong the cases described by the writer in which the eruption took the form partly of superficial papular efflorescences, partly of cutaneous and subcutaneous nodules.

(3) *Hemorrhagic and bullous eruptions.*— In many of these cases there was also a complication with erythema. Vesicles and bullæ or purpuric patches appeared over the body, sometimes accompanied by a rise of temperature, and in almost all instances by arthritic pain or effusion. In one case an endocarditis occurred at the same time.

(4) *Hyperkeratosis.* — This interesting condition has been observed as a sequel of gonorrhea only in the last few years. In a case of Vidal's a gonorrhea contracted in February was followed in April by the appearance of thick, horny accumulations on the right knee and later on the hands and feet, especially the palms and soles. In May there were arthritic symptoms. The hard, horny patches were later on quite symmetrically distributed over the whole body and some of the nails were lost. The affection lasted about nine months. A fresh gonorrheal infection was followed by a similar eruption, running the same course. In a case of Jeanselme's the right hip and both knee-joints became swollen and painful a week after the appearance of a gonorrhea. Three weeks after the rheumatic symptoms, horny plaques made their appearance on the dorsal surfaces of the toes, and also on the outer and inner borders of the feet. There were no inflammatory appearances at the base of the lesions. The affection lasted about six weeks. Jeanselme's theory was that some central nervous lesion was caused by the gonorrhea which produced this symmetrical, trophic process. In a third case, of Chauffard's, there were two attacks of gonorrhea accompanied by severe general symptoms, endocarditis, multiple arthritis, epididymitis and nephritis, and each of these attacks was accompanied by keratoses on the feet, back, penis and thigh. Microscopically there were inflammatory appearances in the papillæ and hypertrophy and increased cornification in the epidermis.

Discussing the gonorrheal eruptions as a whole, Buschke calls attention to the multiformity of the manifestations, that is, erythema, papules, nodules like erythema nodosum, the formation of bullæ, purpura, and exaggerated cornification. The eruption is not confined to particular localities, but may be anywhere, although the scalp is a part usually spared. The mucous membrane of the mouth, throat and eye are not spared in the very acute forms. The eruption develops very quickly, but is very variable in its further course. Sometimes, especially in the scarlatiniform variety, it may have entirely disappeared in twenty-four hours. Other eruptions may last for weeks and months, changing their type repeatedly. The temperature may or may not be raised, and the form of the eruption has no direct relation with the height of the temperature. The eruptions almost always appear in the acute stage of the affection, or, in long-standing chronic cases, in the acute exacerbations. There is almost always some metastatic complication, most frequently implication of the joints, while in a good number there are endo- and peri-carditis and occasionally nephritis. In two cases there was enlargement of the spleen.

With regard to the pathogenesis of these eruptions, it is important at the start to exclude those affections that surely do not belong directly to the gonorrheal process. These are the secondary infections, where septic lesions are caused by the penetration of other micro-organisms in the mucous membrane that has been violated by the gonorrheal affection. In this way septic lesions of the heart and joints are produced, and also possibly septic eruptions, such as are met with in other septic affections, in the form of scarlatinal and hemorrhagic rashes. These may be excluded, as well as the drug eruptions, especially those from copaiba, cubebs and salicylic acid. In many individual cases it may be difficult to exclude the suspicion of a complication of some other affection with the gonorrhea, for example, erythema nodosum in the cases of this type. Yet their independence is regarded as far more probable. The view that these eruptions are to be regarded as reflex appearances produced by irritative processes in the genito-urinary organs is favored by the experiments of Lewin, who was able to produce the same appearances by irritating the urethra with a sound. Similar experiments undertaken by Buschke on his first and third case

failed to produce any result. He believes that these eruptions are produced by the introduction of the gonorrheal poison into the circulation. With regard to the further question, whether they are produced by the direct action of the gonococci on the skin or by that of a toxin, as is probable in so many other affections, the latter view is considered the more probable. It is not possible to demonstrate the gonococcus in the cutaneous lesions, and this parasite has only been found in the skin where there was a direct connection with the gonorrheal mucous membrane. Experimental investigations have, on the other hand, contributed to the view that the toxins and proteins of the gonococcus may produce inflammation, as shown by the studies of Wassermann, Schäffer and Christmas. Buschke concludes that the gonorrheal exanthemata stand in direct etiological relationship to the gonorrheal virus.

THIOSINAMIN SOAPS AND PLASTERS.

In 1892 H. v. Hebra[5] published the results of his observations on the treatment of lupus by subcutaneous injections of thiosinamin.[6] Apart from the distinct impression it made on the active lupous process, he recorded also its remarkable action on the scar tissue, either that produced by cauterization or from spontaneous ulceration of the lupus. Ectropion, caused by the destructive action of the lupous process about the eyelids, was completely healed, and scars about the neck transformed into a pliant tissue. Several patients were shown who had completely recovered motion in joints that had been immovable from the contraction of surrounding scars. Since then thiosinamin injections have been advocated and used in cases of scleroderma, scars and keloid with good results.

Unna, encouraged by these results, determined to try the local action of thiosinamin on the epidermis. The drug is insoluble in water and the alcoholic solution is quite painful when injected under the skin, and for this reason, perhaps, has been less often tried. Unna has used it both as a soap in 5, 10 and 20 per cent. strength, and in combination with his plaster muslins. These applications were compared with those previously used by him (massage combined with mercurial plaster, salicylic acid-plaster muslin, etc.), and found to be far more effective. The plaster proved much more effective and unirritating than the soap, and was tried with success in fibrous tumors of various kinds, keloids, leprous and syphilitic lesions, as well as in the scars from small-pox. In the latter case a mask of thiosinamin plaster muslin was worn during the night. Irritation and pain was not experienced from this method of application, as is the case with the injections. On parts of the body not covered with hair and protected by the clothing, a plaster worn permanently is most effective. On the face, hands and scalp it is better to use the soap, letting it dry on. In severe cases, affecting the face, the two methods may be combined, so that the plaster muslin is worn by night and the soap applied during the day. Thiosinamin soap may also be combined with former methods, such as massage and mercurial plasters, alternating the two procedures.

Unna alludes to the fact that practitioners generally regard the treatment of fibrous and cicatricial deformities as well-nigh hopeless, and while this attitude is not taken by the dermatologist, thiosinamin must be welcomed as a distinct advance in the therapeutics of this condition.

[5] Monatsheft. f. prak. dermat., Bd. xxix, p. 560.
[6] Loc cit., Bd. xv, p. 337.

THE "PHOTOTHERAPY" OF LUPUS.

Dr. Stephen MacKenzie, who had recently returned from a visit to Finsen's Lysinstitut in Copenhagen, gives his impressions of this method in the *British Journal of Dermatology* for November, 1899. He was in daily attendance at the institute for a week and was given every opportunity for observation. He saw in this time a large number of cases that were under treatment, and also of cases previously treated that presented themselves for inspection. About 400 cases in all had been treated up to that time, the larger number during the last two years. MacKenzie says he has formed a favorable opinion of the light treatment. He admits that the results were less favorable where the lupus nodules were deeply seated, owing to the difficulty of penetration of the light and the necessity of prolonging the treatment. In cases where the nodules were superficial the results were very good.

Up to the time of his visit the light treatment had been applied to, besides the skin, the lips, gums, hard palate, tongue, septum of the nose and, guardedly, to the eyelids. Other local caustics and the electrocautery were also applied, and MacKenzie's admission that he was impressed with the importance of frequently employing local measures to the mucous membranes is not especially strong evidence in favor of the light method. The degree of inflammation excited by the light method varies much with the individual. Usually it is slight and causes no pain, but sometimes there are vesicles and bullæ, and the inflammation is much less from sunlight than from the arc light. When the inflammation is severe the treatment may have to be suspended for a time. It is asserted that erysipelas occurs in some cases under treatment just as it does in some cases of lupus not under treatment. MacKenzie says it is difficult to say very much about recurrences, but he saw cases where there had been no recurrence after the treatment had been discontinued for from one to two years. Upon the whole, MacKenzie's paper does not present very strong evidence of the superiority of the light method over others. It is not equally suitable for all cases, and radical surgical methods are often the best. He regards it as far better, however, than curetting or the application of caustics, and he considers that it destroys simply the bacilli, not affecting the diseased or healthy tissues. The objections are the great length of time required, on the average, a daily session of from three to four months, and sometimes as long as twelve months, the expense and the number of attendants necessary; but none of these objections seems to prevent the large influx of patients from all parts of Europe. MacKenzie was sufficiently impressed with this method of treatment to advise its adoption at the London Hospital.

PLAGUE IN MANILA. — Out of a total of 51 cases of suspected bubonic plague reported, 42 have proved genuine and 32 deaths have resulted, half of them being Chinamen. Sanitary regulations are being enforced through a large corps of inspectors, under the superintendence of a health officer. Thirty of the inspectors are Chinamen.

Reports of Societies.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

A. K. STONE, M.D., SECRETARY.

Regular meeting Monday, December 4, 1899, Dr. R. H. Fitz in the chair.

Dr. Charles S. Minot read a paper on

SCIENCE AND HEREDITY.

Robert MacDougall, Ph.D., read a paper on

PSYCHOLOGY AND HEREDITY.[1]

Dr. Putnam: I suppose all of us have but one feeling in regard to these very interesting addresses to which we have listened, namely, that we can add nothing to the illustration of the subject, but in what little we may say, express our appreciation of what we have heard. The physician, I think, whatever his branch of practice may be, is one to whom this question of heredity appeals perhaps more strongly than to any one in the community, in a practical sense, because to him the patient comes often with the spectre of a family disease in one or another form standing before him, and wishes to know what his chances are of falling a victim or escaping. If he can take a hopeful view the better the result of the influence he is likely to exert. From what we have heard to-night it seems to me all of us can take fresh courage, since the view is maintained, on the whole, that in spite of all the limitations that each individual brings into the world he comes in great measure untrammeled, and is at liberty, within certain limits, to develop as circumstances permit. It is evidently true from what has been said that acquired characteristics are not transmitted. The race moves slowly along, working out its tendencies, but a given individual, whatever his limitations may be, has a considerable chance of modifying his lot, a chance that perhaps his parents may not have had. The physician, it seems to me, stands as the guardian of the growing individual, and in great measure also as the person to whom the task falls of correcting the influences which society and environment exert. This enormous social force is being exerted all the time for good and evil, the physician appearing as go-between to recognize the possible beneficial influences and to make them more and more effective for good. Even the individuals whose power to develop is very limited because they are born as cranks or eccentrics of one or another sort may play a useful part. Although they may not be able to improve the race through their descendants, they can act in one or another direction to afford better opportunities for race development to reach their best goal.

Dr. Knapp: I think in spite of the doubt which has been cast as to the possibilities of inheritance of acquired traits, we must as physicians recognize that there is something with which we are dealing, which, although it may not be actually the inheritance of acquired traits in the ancestry, is still a most important and fundamental fact. I think, for example, few of us can view a family who are victims of Friedreich's disease, or muscular dystrophy, without feeling there is a most powerful influence at work there which as yet we cannot fully explain. Yet, although Dr. Minot has shown very clearly the evidence against the inheritance of acquired traits, we must recognize something which I think Dr. Minot would fully agree to, but which he did not dwell upon, namely, that certain influences affecting the general nutrition of the parent can have the most fatal effect upon the condition, later in life, of the child. Binswanger, for instance, who has presented the theory of Weissmann in its relation to nervous diseases most clearly and forcibly, has contended that the alteration in the germ plasma may be inherited or acquired by such conditions as chronic intoxication, infection, constitutional disease or local injury in the neighborhood of the generative organs and may thus lead to profound weakness in the offspring, which is interpreted later in life by some form of disease — often in the form of nervous or mental disease. The doctrine of heredity, therefore, may lose a certain amount of its force by the interpretation of Weissmann, yet it acquires a still greater force by showing the necessity which we are under of guarding against any deterioration of the vital force in the parent in order to prevent disease in the offspring. There is one more fact which seems to me wholly inconsistent with Dr. MacDougall's idea of bringing all the members of the community to a high degree of cultivation by the environment which is brought around them. I think we are surrounded by hundreds of dismal failures of that theory, the efforts which are constantly made in this and other communities to waste $5,000 educations on $5.00 boys. We must recognize it is wholly impossible to bring the individual to a high state of cultivation by his environment unless he has the structural qualities in the brain, which as yet we know nothing about, which are dependent in part upon the fetal nutrition, in part upon various nutritive and other conditions of infancy, and possibly in part upon conditions which he derives from his ancestors.

Dr. MacDougall: One remark in explanation of the statement which Dr. Knapp has questioned. What I had in mind was that practically no individual in the present kind of civilization that exists is able to live a primitive sort of life. He is surrounded with so much to develop him that he has to use appliances that others use and be presented with a vast amount of material which makes his life different from what would be led by the primitive man. It was in that regard I meant we brought them up to that mark.

[1] See page 185 of the Journal.

BOSTON MEDICO-PSYCHOLOGICAL SOCIETY.

J. W. COURTNEY, M.D., SECRETARY.

(Concluded from No. 7, p. 166.)

Regular meeting at the University Club, Thursday, October 19, 1899, Dr. R. T. Edes in the chair.

Dr. Webber: I notice it has been said two or three times that no influence has been noticed upon the mental condition of the patient, but I should like to suggest that any agent which will assist sleep, improve the appetite and the nutrition, while not perhaps showing a direct effect upon the mental condition of the patient, is a powerful means towards recovery, and in that way the packs must favor the restoration to health, though the immediate effect may not be seen in the improved mental condition or sudden improvement. It seems to me that in a good many instances benefit is not obtained, because the packs

are applied only occasionally; they are not applied near enough together to obtain the continuous benefit and good effect from their application; but, if instead of using them at the time of the excitement and when the patient had passed that omitting the packs, if they had been used continuously, as Dr. Abbott used them in a good many of his cases, better results very likely would have been obtained. I have noticed very good results from the wet pack in some cases, not especially of mental disease; and I think we have in the means of hydrotherapy an agent that is of very great value. I have been very much interested in the paper, and am glad to know of the use of wet packs in the asylum. There is one question I would like to ask: whether the patients who have recovered have made any reference to the wet pack; and whether they speak of its benefits as though they were conscious of any good effects from this treatment.

DR. ABBOTT: I don't think any of them were asked about it, and I don't remember that they spoke of it at all. In none of the cases that recovered had the packs been continued very long.

DR. PAGE: We had a case at Danvers that had been pronounced a case of dementia, a young man, and I think he was troubled with constipation, and the family was very much interested in the case. They came to the hospital frequently, and in order to satisfy them I took additional interest in that case, and I thought I would try this girdle treatment and bring about the crisis as I explained a while ago. I remember that I ordered for that young man a girdle, or wet pack around the body, perhaps ten inches wide around his bowels, and that that should be freshly soaked in cold water as often as it got dry. The constipation was cured; and, by the way, I have seen several cases of constipation cured in that way. I believe that there were no ulcers produced in that case, but in a few weeks the mental condition of the young man improved and went on so rapidly that he went home, and his friends were of course very much gratified, because they had been assured by the officer of the hospital that there was no hope of his recovery, that he had passed into a state of dementia; and I remember their coming to me when he went away and I advised them to occasionally put on that girdle. I thought it might help out possibly in some way, and told them if he got excited or disturbed — he was an excitable young man — to try the cold water treatment in that way. Whether or not he has remained well I have no information, but he did not come back to the hospital, and as the family lived within five miles of the hospital I am sure he would have drifted back if his mind had become disordered again. I would like to say also, in addition, I have seen repeatedly the results of a daily blood count where the douche treatment was used, and there would be an increased number of red cells regularly from day to day. Of course they were not manufactured as rapidly as they would appear, but brought into the circulation from some source, and I was told that the experience in the German Hospital in Philadelphia and also that in New York with this douche upon cases of neurasthenia was more satisfactory than any other treatment that had ever been adopted by the physicians who had tried it there, and I think they still use it at the Vanderbilt Clinic and at the German Hospital. As Dr. Webber says, if you can be sure you are improving the metabolism and equalizing the circulation, you are doing all you can expect towards improving the mental condition, and if processes have not been set up beyond the reach of all medical help you ought to benefit them. I think Dr. Harrington is very much interested in this subject.

DR. HARRINGTON: I have been interested in this subject of hydrotherapy a long time, and some years ago while an assistant of Dr. Page in Danvers, we did something in that line in a crude sort of way, with some results. The douche-room which Dr. Page fitted up at Danvers two years ago for this purpose has been in constant use except when repairs were being made, and we have treated and are treating daily from 20 to 30 patients. The results in a general way are these: We have marked and rapid improvement in cases of alcoholism, particularly acute alcoholism; it seems to brace up the nervous system and the circulation better than anything else that I know of. And another class of cases in which we notice marked improvement, which has already been mentioned, are the anemias; they improve very rapidly, and the blood count shows the gain. Another class of cases are those in which there are vasomotor disturbances, where there are cold hands and feet and blueness of the extremities, where perhaps there is vasomotor paralysis. These cases will improve quite markedly and even with the first few applications there will be seen a change, marked change in circulation after the bath, but the unfavorable vasomotor condition may return again perhaps and will do so for days, but finally the nervous centres I believe are strengthened by this method of treatment. It is gratifying to know that these methods are being introduced and used more and are being more heard of and talked about by the medical profession. There is one thing that ought to be remembered, I think, and considerable stress laid upon it, namely, that water has its physiological action and its therapeutic indications just as much as any drug, and it cannot be used in any haphazard way and get the results that you wish to look for. At Danvers this past year we sent one of our physicians to New York, and he studied with Dr. Baruch and acquired all his methods and technique. Every case which now goes to the douche room for treatment is examined, that is, the record of the case is read by the physician and he sees what the physical examination was on admission, then he makes any further examination he may deem necessary, and every case is given a definite written prescription and the observations are made as carefully on every patient as time will allow. One thing that we observed as regards men and women, that men like the hydrotherapeutic treatment very much, but as a rule women do not; they object to it and we have to urge them oftentimes to go to the douche-room, and try to prevail upon them to do so, but still they object to it. With the apparatus we have to use water in a wide range of methods with varying temperatures and pressures and various forms of stream. I have not had a very extended experience with the cold pack personally, but I have seen instances in which motor excitement has seemed surely to be quieted and I was quite surprised that the doctor finds so many cases in which the same effect is reported. We had one case last winter which was very excited for days. The cold pack was tried persistently. This patient was also very much confused. The cold pack being used persistently in her case did seem to relieve her

mental confusion, at least her mental confusion cleared up a great deal and her motor excitement became markedly less. This case, however, did not recover. We have noticed very favorable results in insomnia during this past year by the use of sweaters, which Dr. Page alluded to. That is a very convenient method of applying a sort of cold pack.

Dr. Baldwin: In my private work I have had occasion to look after excited patients where there have been plenty of nurses, and where it has been necessary that there should be no restraint used to shock the feelings of the people at home. I have been for a number of years accustomed, when necessary, to use a wet pack for these patients. I have always been impressed with the wisdom of the man subject to attacks of depression, who, when he felt them coming on, used to draw a bath tub full of cold water and jump into it, and he remarked that he never came out with the same thoughts and feelings that he had when he went in. It seems to me aside from being a restraint that the wet pack, no matter how warm the sheets when you wring it out, acts in the same way, and it does have some effect to change the current of one's thoughts.

Dr. Bancroft: I should like to ask Dr. Harrington, who has apparently had some experience with the wet pack, and the more expensive and complicated apparatus as used now at Danvers, if he found any objection to patients taking the wet pack. I understand you met with a great deal of opposition from the women. We have tried the wet pack at Concord with the women almost exclusively and never found any objection from them to going into it, and yet you say they objected to the douche.

Dr. Harrington: They objected to going to the douche-room and taking the bath. I did not mean to be understood that they objected especially to the cold pack.

Dr. Bancroft: My experience has been that they rather liked it.

Dr. Harrington: We hear wails every day when the women come back from the douche-room, and they often beg not to be sent again.

Dr. Bancroft: It occurred to me whether it was not an argument in favor of the wet pack if the patients object to the more expensive apparatus and do not object to the wet pack; it is a question in my mind whether we do not get the same beneficial effects from the cheaper old-fashioned method of the sheet wrung out in cold water.

Dr. Harrington: You undoubtedly can get the therapeutic effects from various ways without any apparatus except sheets and blankets, bath tub and tin dippers.

Dr. Page: I have seen patients in covered bath tubs in England and I thought it was the most forbidding form of restraint ever devised. I am told by Dr. Clouston, of Edinburgh, they have not employed this method for many years, since they had two persons die in the tub, probably owing to the fact that the water was allowed to get too warm and the patients fainted away. They were locked in like a person in the stocks. There was a big board over the bath tub, the neck fitting in the hole through the board.

Dr. Worcester: There was considerable stir made in England, I think some two years ago, about a case in which a patient was kept in a wet pack for twenty-four hours, or more, continuously for disciplinary purposes and died in it. It was in some private asylum.

Dr. Page: This restraint was in the Holway Asylum. When I was there I saw a woman in the tub who begged me piteously to let her out and I wanted to do so, but the superintendent was with me and I didn't dare to. That was the hospital where a patient died subsequently in a pack, and an investigation was held by the commissioner of lunacy.

Dr. Abbott: The prolonged baths I think are now used in Heidelberg and the cases in which they get most benefit are those of the maniacal phase of manic-depressive insanity; it is those cases in which we have had the best therapeutic results at Northampton.

In regard to the duration of packs, Dr. Page has spoken of not continuing them so long as three hours. Apart from the fact that patients are under constant observation for unfavorable symptoms, and none are found even after a pack has been continued four or five hours, provided it has been properly given, one investigator has found that after about two and a half to three hours there is evidence that toxins are eliminated; that is, the fluid wrung out from the sheets with which the patients have been wrapped is found to be toxic for small animals. Whether those results have been confirmed by further investigations I don't know If packs are taken off at the end of an hour patients sometimes have to be wakened out of a sleep to remove them. The patients feel comfortable if the pack is properly applied, for so long a time as it has been thought best to continue them. These facts justify a prolonged application, even to four or five hours.

Whether the pack should lead up to colder applications, as Dr. Putnam suggests, depends partly upon the object to be accomplished by it. In most of the cases reported it was used for its quieting effect, and a brisk rubbing down after the pack to bring the glow to the skin was considered sufficient. If the pack had been given for the tonic effect on nutrition we should have given it for a shorter time and followed it by cold applications.

The first case of general paralysis on which we tried the wet packs at the McLean Hospital was one of such rapid exhaustion from refusal of food and constant activity and resistance that an almost certainly fatal result within twenty-four hours was predicted. A similar case, in which packs had not been tried, however, had died not long before, and that must be the one Dr. Tuttle has in mind. Packs were given and the patient began to eat at once; he improved from the very hour the first pack was applied. So with one of these cases of paresis on which they were tried at Northampton, only there they were not continued more than ten days, the immediate urgency having been relieved.

That the packs have more than a moral disciplinary effect and more than enhance the influence of the physician is shown by the fact that very few of these patients on whom we tried the packs would be as quiet three hours after restraint by camisole or being held by nurses as they are three hours after the pack; they would have been very much more resentful of such restraint and probably would have begun right away to use violence again. There is something more than moral effect, and it is this fact that justifies its use in these cases of excitement.

We cannot yet say that because nutrition, etc., are

improved by the packs they therefore exercise a curative effect on the psychosis. For example, in a chronic case of eight or ten years' standing that has violent outbreaks the latter may be markedly diminished and nutrition may be improved, but the psychosis is still there, delusions still persist, and there is no expectation that the patient will recover. It will be rather in the acute cases, like the maniacal phases of manic-depressive insanity or acute stages of dementia precox, that most benefit is to be expected.

A special room for hydrotherapeutic measures is desirable and even necessary for some modes of treatment, but I think it is a great advantage to have such simple measures that they can be used in the room where the patient is, rather than have the patient taken to another ward or another room. Where such measures are used as a means of introducing variety into the life of the patient there is a distinct indication for a special place, and many kinds of apparatus require a special room; but some of the results obtained by such expensive apparatus can also be secured by the use of the pack, which can be applied in any place without special apparatus. It is to these that I wished to call attention.

Recent Literature.

A Text-Book of Materia Medica, Therapeutics and Pharmacology. By GEORGE FRANK BUTLER, Ph.G., M.D., Professor of Materia Medica and Clinical Medicine in the College of Physicians and Surgeons, Medical Department of the University of Illinois, etc. Third edition, thoroughly revised. Philadelphia: W. B. Saunders. 1899.

A third edition in three years is proof that a book has merits and fills a need. The present volume contains 826 pages, excluding the indices. Following the introduction are definitions of pharmacology and therapeutics, with sections on the classification and administration of medicines, the untoward effects of drugs, and weights and measures.

Pharmaceutical preparations occupy some 80 pages. It seems to us a mistake to devote so much attention to this branch of the subject, especially in this instance, because the writer furnishes all and more than is needed for the student in his discussion of the individual drugs. As an example of this is iron, which consumes by the enumeration of its preparations more than 10 pages! Surely the sins of our forefathers are visited upon us. The therapeutics of to-day is simpler than ever, because it rests on a more rational basis. Why not give the student the benefit and write a simple book?

The drugs are divided into "disease medicines" and "symptom medicines"—a classification rather more unsatisfactory than usual. Why bitters should be considered disease medicine is hard to see.

Twenty-eight pages at the end of the book are devoted to prescription writing. It is certainly a sad commentary on the requirements for admission to our medical schools that it is deemed necessary by the author to decline "oliva" and "fluidus" in full.

The account of serum therapy is good. On page 144 hydrochloric acid is recommended for atonic dyspepsia; on page 164 alkalies are advised for the same condition. How much more advantage students would derive from a résumé of gastric treatment based on the study of the secretions and the motility of the stomach than from these loose statements.

It is unfortunate that students also must learn the following: "The diluted hydrochloric acid is a valuable (!) internal remedy in the treatment of diphtheria, and during the course of fevers, particularly typhoid. As a routine treatment in the latter disease the author almost invariably gives hydrochloric acid in connection with pepsin, finding that it not only allays thirst and moistens the tongue, but exerts an antiseptic influence in the bowels (?), thereby lessening the danger of autoinfection(!?) and relapse (!?)."

There are some good things in the book, but the author owes it to his readers to rewrite much of the text.

The American Year-Book of Medicine and Surgery. Being a Yearly Digest of Scientific Progress and Authoritative Opinion in all Branches of Medicine and Surgery, drawn from Journals, Monographs and Text-Books of the Leading American and Foreign Authors and Investigators. Collected and arranged, with critical editorial comments, under the editorial charge of GEORGE M. GOULD, M.D. Philadelphia: W. B. Saunders. 1900.

This well-known Year-Book is issued this year for the first time in two volumes, one on medicine, the other on surgery, without increase in cost. Each volume may be had separately if desired. The constant increase in medical literature has made this change necessary. The previous single volumes of this work already contained from 1,100 to 1,200 pages and were becoming unwieldy. These two volumes contain a little over 1,200 pages. The volume on medicine has about 100 pages more than the volume on surgery. Each volume has its own index.

The medical volume is divided into General Medicine, Pediatrics, Pathology, Nervous and Mental Diseases, Cutaneous Medicine, Materia Medica, Physiology and Legal Medicine, Hygiene, Chemistry, etc.

The surgical volume embraces General Surgery, Obstetrics, Gynecology, Orthopedic Surgery, Ophthalmology, Otology, Larynology, Rhinology and Anatomy.

Some changes have been made in the editorial staff. Dr. Gould now has fifteen collaborators, among whom the different departments are divided up. The work as a whole is well and carefully done, the paper and type are excellent, and such illustrations as are given are good. There has been no effort to make it a picture-book.

These volumes would be a valuable addition to the physician's library.

MEMORIAL TO J. W. STICKLER, JR., M.D.—Mr. and Mrs. Joseph W. Stickler, of Orange, N. J., have offered $40,000 to the Young Men's Christian Association of that city, for the erection of a new building as an additional memorial to their son, Dr. J. W. Stickler, Jr., who died last year, and who was the first president of the association. Plans of the memorial library building which, as previously announced, Mr. and Mrs. Stickler are to erect at a cost of $40,000, have now been completed, and one of the rooms in it is to be devoted to the medical library of the deceased physician, for the use of medical students. Dr. Stickler's entire laboratory apparatus has been given by his widow to the Orange Memorial Hospital.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, FEBRUARY 22, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.

ANNUAL REPORT OF HARVARD UNIVERSITY.

As is natural, these reports grow in bulk with the growth of the University and this increase has of recent years been considerable. According to our usual custom, we shall try to pick out those points having an especial interest for the medical profession. The President tells us that "the common attainment of the degree of Bachelor of Arts in three years is certainly approaching. No specific legislation will be needed to accomplish this important change; for any young man of fair abilities can now procure the degree in three years without hurry or overwork, if he wishes to do so, or if his parents wish to have him. That this wish is felt by an increasing number of students and parents is demonstrable. . . . Within a time, comparatively short, the majority of those who enter the freshman class will come to college with the purpose of completing the requirements for the degree in three years. A large number of the present freshman class have already avowed that intention, and made their choice of studies accordingly." Anatomy, physiology and hygiene are now among the studies which may be presented in satisfaction of the requirements for admission to Harvard College. Putting these statements together, one sees some prospect of reconciling the possession of an A.B. degree with the increasing demands of the professional schools, and the possibility of entering upon an active career in the learned professions — these including to-day more than the three of our fathers — at a period of manhood not too advanced. All this is of especial interest to those seeking a medical training, the demands of which are now so exacting.

The extraordinarily low death-rate reported by the Dean of the College in successive years is very striking, and tends, as the President states, to show that college students are in reality a picked body of youth, physically, as well as mentally and morally. In the year 1895–96 four died out of 1,772; in 1896–97 four out of 1,754; in 1897–98 four out of 1,819, and in the year 1898–99 three out of 1,851.

The function of the medical visitor is now established as a regular part of the college system, and tables are given showing the nature of the diseases which prevailed among the students in Cambridge in each month of the year and the number of days of illness in each month. The President believes that this office not only secures for the sick student earlier and better treatment than he would otherwise have, but also prevents serious sickness by providing the ignorant student who works to excess, drinks too much tea and coffee, sleeps too little, eats too much, or takes no exercise, with wholesome advice in good season. Dr. G. W. Fitz, who filled this office, did not desire reappointment at the end of his five years' service as an assistant professor last September.

In connection with this office of medical visitor and the duties inherent to it, we note the President's announcement of an endowment from an anonymous source of $156,000, for the establishment of a professorship of hygiene; the object of the giver being "to provide the students of Harvard College with a medical friend competent to give them the best advice, winning in his nature, and devoting himself chiefly to the physical and moral welfare of the undergraduates at Cambridge. . . . He is not to be a teacher in the ordinary sense of the term, though he may lecture, and he is not to be professionally connected with the Medical School, though he will be free to undertake hospital service; neither should he have so much practice, whether in consultation or otherwise, that his attention should be much diverted from the body of undergraduates, and inasmuch as his salary under these conditions will be the greater part of his income, the giver of the fund desires that it accumulate until it yield a liberal salary, sufficient to attract to the position a man of high quality."

"This gift," the President remarks, "is one of the most interesting which the University has lately received, and one likely to do much good, first, by informing the prevailing ignorance concerning the means of bodily health; secondly, by checking or preventing reckless exposure to moral and physical evils, and thirdly, by arresting incipient injury through wise and seasonable advice."

The following extract is given from the agreement in regard to this professorship of hygiene:

"To apply the said fund so soon as the income thereof shall be large enough in the judgment of said Corporation for a permanent foundation for the liberal maintenance in the undergraduate department of said College of a full professorship of hygiene.

"The holder of such professorship shall be a regularly educated physician of marked ability and industry and of a temperament likely to enable him to elicit readily the confidence of young men. His duty shall include an earnest personal interest in the physical welfare of the undergraduates and an intimate personal intercourse with them so far as this can be had without officiousness on his part, to the end that he may proffer advice in a spirit of friendliness and be easily approached by such of them as desire his counsel.

"It shall be the duty of the professor, both by advice and by personal interest, to encourage especially open-air exercise and sports, and to take a particular care that undergraduates of sedentary and studious habits be made acquainted with the importance of physical recreation."

The importance now attributed to this sort of academic supervision is well illustrated by the recent discussion as to its birthplace among the colleges, just as the cities of Greece disputed the honor of the birthplace of Homer.

We have elsewhere and previously considered most of the especial points in this report having reference to the Medical School. In regard to one of the most important changes the President says:

"The results of the experiment of massing all the lectures and laboratory exercises in a fundamental subject into a half-year, and keeping the whole time of the student during that period occupied with two subjects will be of interest not only in the Medical Department, but in many other departments of the University. The preliminary work in preparing this plan was done by a committee of the Medical Faculty called the Committee on Medical Education, and the same Committee has under consideration a rearrangement of the work of the third and fourth years. The changes in the programme of the first two years have already gone into effect, and are giving great satisfaction." A definite judgment upon this experiment can hardly be passed until the results of the second examinations in the studies of the first years have been determined.

There has been an increase during the last five years in the percentage of college graduates among the new matriculants of the school; but in the year under review the percentage of new matriculants who held a degree in arts, letters or science was only 42.66 per cent. After the current year, the entering class is to be composed exclusively of college or scientific school graduates.

Notwithstanding numerous changes in the interior of its present building, the Medical School urgently needs more lecture room and more laboratory room. This need must either be met radically by moving the whole school to some other site and erecting new buildings, or temporarily by finding accommodation for some departments outside the present buildings.

The Dental School, though prosperous, and, partly because it is prosperous, having an income exceeding its expenses, is in the same position with regard to its home. The difficulty here is increased by the fact that the Dental School does not own its building and the building is liable to be sold. All this means money and a good deal of it.

The close connection between the Dental School and the Medical School, at least during the first year of instruction, makes it important, the President thinks, that when a new building can be erected for the Dental School it should be placed close to the Medical School, or at least close to that part of the Medical School in which the instruction of the first year is given. On the other hand, for the sake of patients for clinical instruction, it is very important for the Dental School to be in the centre of a populous neighborhood.

The Corporation during the year determined on another large use of the Pierce bequest — this time for the promotion of instruction in comparative medicine, but in three separate sums, $100,000 as the foundation of a new professorship to bear his name, $100,000 for a medical laboratory building to bear his name, and $100,000 as an endowment for the laboratory. The details of this appropriation await the advice of the Faculty of Medicine. The ultimate disposition of the Calvin Ellis bequest apparently still remains to be determined.

As a matter of some general interest, we note that the Corporation has voted that it is not prepared to admit women to the instruction of the Law School.

MUD AND DUST IN WINTER.

AN occasional snow-storm should not, in the least, abate our interest in the question of dust and its menace to health, which has of late particularly agitated this community. Experience has shown that a considerable part of the New England winter is likely to be without sufficient snow to prevent the accumulation and dissemination of dust. In spite of the comparatively heavy fall of snow we have just experienced, the irrepressible dust has still actually on the same day been much in evidence on one of the main streets of this city, due merely to the fact that after the snow was blown off a certain area of the street, the underlying dust found again its opportunity. Whatever the final remedy for the nuisance may prove to be, it is sufficiently evident that we cannot depend upon the caprices of the weather alone, in the shape of opportune rain or snow storms. We must find some means of actually getting rid of the dust, and of the conditions which make possible its accumulation.

Clearly we are not alone in our faultfinding, for in a current issue of our contemporary the *Medical Press*, a vigorous protest is raised against mud as the progenitor of dust, and hence equally to be avoided. Thankful as we should have been during the last months for mud in any amount, we should not forget, as our contemporary points out, that mud always represents the possibility of dust, and that our watering carts in summer and our rains or snows in winter are merely palliative and not curative. We should in some way get at the source of the difficulty by insisting on absolutely clean streets. In the meantime the following suggestions of the *Medical Press* are apt and interesting:

"The part played by mud in the hidden and various ways of disease production will doubtless be one day laid bare by some curious apostle of science. Meanwhile there are certain points about mud that

are clear to the man in the street. Its distribution by the splash of passing vehicles covers a much wider field than folk usually recognize. Spots of mud thus projected may often be seen adhering to house-fronts at a height of several feet above the top of the ground-floor windows. Dry mud, be it remembered, is on the way to become dust, to be blown hither and thither with its host of microbes, good, bad and indifferent. 'The bacteriology of street mud'— who will undertake that investigation, laborious, well-nigh boundless, fascinating, complexly baffling, and yet fraught with vast potentialities for the good of man. The average citizen, however, knows little and cares less for the bugbears of bacteriology; he is more concerned for the safety of his clean collar, the polish of his silk hat, the sheen of his shoes, and the untarnished splendor of his raiment beneath the spatterings of a muddy day in the city. Where the mud comes from is a mystery in the case of smooth impermeable pavements. It is certainly greatly lessened in amount when asphalt, concrete, or wooden roadways replace the time-honored macadam. Judging from the signs of the times, it seems likely that in a not distant future sanitary authorities will learn to take a deep interest in the matter of city mud in relation to the public health."

To those of us who have taken the trouble to watch the methods of the city employé in his street-cleaning attempt, it is not difficult to see why we still have mud and therefore dust. After a rain-storm, for example, a small army of men may be seen scraping a portion of the mud into small piles, which are then in part thrown into carts. From the remainder dust is made which again is heaped by nonchalant workmen into piles, which in turn, if any wind be blowing, are thrown rather into the surrounding air than into the carts ready to receive them. In short, quite apart from the question of pavement, our streets are not properly cleaned. We certainly need better pavements, but we also require a consistent and painstaking effort on the part of the authorities to take measures, clearly within their power, toward the furtherance of adequate street cleaning.

CASES OF RASH AFTER ENEMATA.

In the *Glasgow Medical Journal* for September, 1899, Dr. T. K. Monro, of Glasgow, calls attention to the fact that, although the observation is not new, it is true that cutaneous eruptions may be produced by enemata, and that this has escaped mention in most dermatological text-books. The writer thinks that this eruption has often been wrongly attributed to a surgical operation or to an anesthetic, and that some cases of so-called surgical and puerperal scarlatina are due to enemata. Also many cases have been attributed to the action of drugs that really belong in this class.

All the cases that the writer has been able to collect are in the English language, and all but one are found in British literature. In only one case, that of a boy of eleven years, was a male affected; in 26 others besides the six reported by him, the patients were females. Burford and Gardner, who have published the largest number of cases, were gynecologists. Three of the cases were in patients suffering from gastric ulcer. Habitual constipation seems to be a condition common to the greater number of cases, and to account for the greater prevalence in the female sex. The eruption may occur in patients who have previously used enemata without any such effect, and subsequent enemata may or may not act in the same way. Usually the interval between the injection and the appearance of the eruption is about twelve hours, but it may be as long as twenty-four, or as short as two hours, and the eruption's average duration is two or three days. In type the eruption is either scarlatiniform, morbilliform, or urticarial of the small type. Occasionally, these forms may be combined. The seats of predilection are the buttocks and thighs, and the face, but any portion of the body may be invaded. Slight changes in the temperature and in the pulse have been noticed, and occasionally there is redness of the tongue and fauces. Constitutional symptoms are usually wanting. There may be considerable burning and itching. The eruption occurs only after enemata of large size, never after glycerine or nutrient enemata.

It has been generally assumed that the cause of the eruption is fecal absorption, which is partly excreted by the skin and causes the rash. Morgan, in 1895, suggested that it was due to a particular kind of soap, and Gardner, that it was often produced by the use of hard yellow soap. Others have stated that the eruption follows three to four per cent. of the enemata, and that it is common also after a strong aperient in chronic constipation. The writer asserts that experience has shown that soft and not hard soaps ought to be used in enemata. Six new cases are described.

In the first case, that of a woman of twenty-five, who was being treated for hemorrhage from gastric ulcer, the patient had had for about a week before the appearance of the rash nutrient suppositories, and enemata of milk, eggs and beef tea. She had also had laxative enemata of soap and warm water, and, on one occasion, of castor oil every two or three days. Dilute hydrocyanic acid and chloroform water were the only drugs employed. The eruption was an erythema not sharply bounded, in some places distinctly elevated, affecting the face very slightly, well marked on the right upper arm and forearm and on the thighs, slight on the hands and legs.

In the second case, that of a woman of twenty-two, an eruption of a morbilliform character appeared about twenty-four hours after an enema of soap and water. The eruption was very pruritic, and was most marked on the trunk, although later it was actively present on the arms and legs. It is admitted that in this case the administration of chlorodyne at the same time as the enema renders the etiology somewhat doubtful.

In the third case, the day after several enemata of

soap and water had been given for pain in the bowels, there appeared a diffuse erythema of the face and hand. Morphia had been given hypodermatically the night before the eruption appeared.

The fourth case was that of a governess, who had after an enema (and the administration of chloroform) a general scarlatiniform eruption accompanied by fever. There was some redness of the fauces, but the tongue was not characteristic of scarlet fever. At the end of three days, when the patient was last seen, the eruption had practically gone from the extremities, but was well marked on the hips and thigh.

In the fifth case, a woman of twenty-two was in the beginning of her second week of typhoid fever. Twelve hours after an enema of hot water with soap and castor oil she was awakened by itching of the arms, neck and face, and the next morning there was a pretty general urticaria present. The same result followed a second enema, while a third one was not succeeded by any eruption. This patient had previously used enemata of soap and water without any cutaneous disturbance.

The last case, one of gastric ulcer, developed an itchy, papular eruption on the face, hands and thighs, a few hours after an enema of water, soap and castor oil. This eruption extended rapidly over the whole body. A second enema a few days later was followed by the same appearances.

THE LIMIT IS REACHED.

WE have long looked somewhat askance at the growing tendency toward the coining of new medical terms. The unfortunate gall-bladder and liver region has suffered most severely at the hands of the anastomosing and resecting surgeon, who has seen fit to burden with a new name each new operation. We stoutly maintain, however, that the limit has been reached when such words as the following are thrust upon us. A distinguished surgeon writes, "I report this case because it suggested a new operation, hepaticocholecystostcholecystenterostomy, or hepaticocholecystostenterostomy." If our opinion were asked we should choose the second alternative, since it comprises thirty-one instead of forty letters, but we should much prefer to be spared either, even granting the necessity of a slight circumlocution in arriving at the meaning. When a word is unpronounceable it should be inadmissible in any well organized language, and these, we urge, are pronounceable, if at all, only after strenuous practice. Let us at least stop here.

MEDICAL NOTES.

STATISTICS REGARDING ILLNESS AT HARVARD UNIVERSITY. — We learn that objection has been made to a note published in our issue of January 25th, on "Illness at Harvard University during the year 1898–99." After quoting certain facts we said, "The value of statistics of this sort is not altogether apparent." Our meaning naturally was that from a medical standpoint such statistics are of small value, owing to the relative fewness of the observations, and to the method of classification used. We are now informed that the analysis of the students' illness has been made solely for the purpose of determining Harvard's need of an infirmary and of making that need definite. We are completely in sympathy with all efforts toward the establishment of such an infirmary, as previously indicated in our editorial columns, and have no desire to criticise means directed to that end.

PRACTICAL GUIDE TO THE DESTRUCTION OF MOSQUITOES.—The Liverpool School of Tropical Diseases, according to the *British Medical Journal*, has just issued a pamphlet entitled "Instructions for the Prevention of Malarial Fever for the Use of Residents in Malarious Places." Within the compass of fourteen pages it sets forth in concise terms which cannot fail to be understood facts of practical importance concerning the parasitic nature of malarial infection, its connection with a special kind of mosquito, and the means which hold out the best hopes of ridding a house or a neighborhood of these insects and of the malaria which they are believed to convey.

LAWS REGARDING TUBERCULIN. — Illinois farmers and stockmen are agitating changes in the laws regarding the tuberculin test for tuberculosis in cattle, and their compulsory enforcement. A report which was recently submitted at a mass meeting in Chicago summed up all the disadvantages of the tuberculin test as it is at present applied. The report was adopted and also a resolution to the effect that the chairman of the meeting appoint a standing committee of five, to whom all facts, experiences and complaints with reference to tuberculosis in cattle might be communicated.

YELLOW FEVER ON SANTOS STEAMER. — It is reported that a steamer recently arrived in New York from Santos had on board two cases of yellow fever during the voyage. A fireman died of the disease and was buried at sea, and the other has been removed to an isolation hospital. The vessel's cargo is being held, subject to action by the health authorities.

STATISTICS FROM PUERTO RICO. — The consolidated report of the Board of Charities of Puerto Rico, for the week ending January 27, 1900, gives the following statistics: The total population of the island is 956,779. Of these 80,642 are classed as indigent; 3,857 as sick; 669,425 rations were issued, and 9,076 men were working for food alone.

INSANE SOLDIERS.— During the last three months it is reported that nearly 250 soldiers with mental disease have been sent across the continent, and it is said that over 200 more will soon arrive at San Francisco from Manila. In nearly all cases the men are said to be violently insane.

A LAW REGARDING ICE. — Acting on the advice of the Council of Hygiene, the prefect of police in

Paris, it is said, has decided that ice sellers must sell ice of two definitely distinct kinds. These must be ticketed as ice for eating purposes and ice for industrial purposes, the former being obtained from spring or sterilized water.

Havana Board of Health. — An Havana Board of Health, consisting of six Cuban physicians, has been organized by General Ludlow. The chief surgeon and chief sanitary officer of the Department of Havana are members *ex officio* of the Board.

Sir Michael Foster, M. P. — Sir Michael Foster has been elected as an Independent Unionist, by a very handsome vote, to represent the University of London in Parliament. He replaces Sir John Lubbock, who was a Liberal Unionist.

Hospital Ship "Missouri." — The hospital ship *Missouri*, now in service in the Pacific, is said to be both unseaworthy and unsanitary. An investigation into the condition of the vessel will be made.

Bequest to a Hospital. — It is reported that James Walker, of Wilmington, N. C., is to provide the City Hospital of that city with a building to cost $30,000.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the six days ending at noon, February 20, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 93, scarlatina 38, measles 61, typhoid fever 3.

Vaccination in Connecticut; Death Certificates. — According to the Bulletin of the Connecticut State Board of Health, Connecticut has been remarkably exempt from small-pox in view of its widespread prevalence in many other States. This is attributed to vaccination, which is more general in this State than in most other States, although it is not compulsory. Since the Bulletin was issued, Dr. Lindsley, Secretary of the Board of Health, has had letters from town health officers, stating that in their respective towns vaccination had been of late years much neglected. He points out the possible dangers of an epidemic in those towns and says: "Vaccination is a public duty for the protection of the whole community, as well as a private obligation for self-preservation, which none have the right to neglect." Dr. Lindsley further writes in this report that the new form of death certificates has blank spaces after the words year, month and day, to give the exact date of death. Of course the blundering genius has seized his opportunity. It is astonishing to what extent human ingenuity can invent wrong ways of filling out a blank form of certificate. This time the blunderer completely defeats the purpose of the certificate by writing the day of the week instead of the day of the month, thus: Year, 1900; month, January; day, Tuesday. Query, which Tuesday? There were five in January. Registrars who issue burial permits on such certificates, and there are several of them, ought to have their names published in the *Journal of Statistics*.

The Willard Hospital. — It was one of the wishes of Miss Frances Willard to establish a hospital for the care and treatment of dipsomania. After careful deliberation a corporation has been formed under the laws of Massachusetts, to be known as the Willard Hospital Corporation. A country place having suitable buildings and extensive grounds with pleasant surroundings, located within fifteen miles of Boston, has been selected, and the directors are now endeavoring to raise the necessary funds to establish and maintain such an institution.

Medford Schools Reopen. — The Tufts and Lincoln Schools in South Medford have been reopened, after being closed for two weeks on account of the prevalence of diphtheria and scarlet fever. Since the schools were closed the buildings have been thoroughly fumigated and the plumbing carefully overhauled. The books which were used by children who have since been ill with scarlet fever or diphtheria have been burned.

The Sharon Sanitarium. — A performance was given February 15th at the Tremont Theatre for the benefit of the Sharon Sanitarium, in which various well-known actors and actresses took part, among whom were Mrs. Agnes Booth-Schoeffel and John Drew.

Hospital for Peabody, Mass. — Land has been purchased in Peabody, for the purpose of establishing a hospital. The tract comprises 114,500 square feet.

NEW YORK.

Award of Prizes, Tenement House Exhibition. — The jury of award in the prize competition at the Tenement House Exhibition, in assigning the award in the case of the third prize for tenement house plans, found that three of the plans submitted were of equal merit, and as the amount of this prize was but $100, a purse of $225 was made up, to be divided equally among the three competitors. It is stated that the committee of the Charity Organization Society having charge of the exhibition has already received offers from builders to construct several buildings after the best plans submitted. One of the notable models exhibited represents in miniature the most populous block in New York, between 61st and 62d Streets, on the west side of the city, where 4,000 human beings live. Of the 2,639 rooms in the houses, only 1,198 have windows facing the outer air, and there is not a bath tub in the block.

Annual Report, Manhattan Eye and Ear Hospital. — The thirtieth annual report of the Board of Directors of the Manhattan Eye and Ear Hospital states that during the past year 1,407 applicants were refused treatment because it appeared that they ought to pay. For some time past doubtful cases have been referred to the Charity Organization Society for investigation, and during the year 120 cases were so re-

ferred. An extract from the law having for its object the correction of the abuse of medical charity which was passed by the Legislature last year is now printed on the back of each card, so that no one applying at the hospital can claim ignorance of the law. The report states that the C. R. Agnew Memorial Fund now amounts to $21,217, and that $5,000 has been received from Miss Helen Gould for the endowment of a free bed.

THE OFFICE OF CORONER. — At a meeting of the Society of Medical Jurisprudence held February 12th, Dr. Hamilton Williams read a paper on "The Coroner's Physician at Work," in the course of which he argued against the abolition of the coroner's office. Drs. Donlin and Weston, also coroner's physicians, spoke of the onerous and exacting work and the inadequate payment of the position. They thought that the number of coroners' physicians should be increased. At present there are but four for the entire Borough of Manhattan, and they believed that there should be one for every 200,000 of the population. Dr. H. R. Purdy spoke strongly in favor of doing away with the coroner's office, expressing the opinion that the work now done by the latter could be better accomplished by experts appointed by the Board of Health.

ANNUAL REPORT, DEMILT DISPENSARY. — In the forty-ninth annual report of the Demilt Dispensary it is stated that the success of the dispensary baths for working people, which increased from 17,089 in 1897 to 37,236 in 1899, has been a source of gratification to the managers, the baths having proved a great boon to many persons who have no bathing facilities whatever in their tenements and who gladly avail themselves of the benefits offered.

Miscellany.

A MODEL TENEMENT HOUSE EXHIBITION.

A MODEL tenement house exhibition, which is to last for two weeks, under the auspices of the Tenement House Committee of the Charity Organization Society, was opened on February 10th, with addresses by Frederick W. Holls, Chairman of the Committee, Governor Roosevelt, Dr. E. R. L. Gould and others. Over three hundred plans of model tenements have been submitted by architects in competition for the prizes offered, and the exhibition includes models, plans, maps, charts and tables of statistics, showing existing conditions in New York tenement houses, model tenements in various cities of the world, lodging houses, suburban dwellings for the poor, health conditions, poverty conditions, and agencies for betterment. According to the statement of the Committee, there are at present over 44,000 tenements within the limits of the old city of New York (prior to the consolidation of 1898), and new tenements are now being erected at the rate of about 2,000 a year. These are, in many respects, worse than the old buildings erected thirty years ago. They are, in some instances, badly constructed, and so planned that many rooms depend for their light and air entirely upon long, narrow, dark "air shafts," which, instead of giving light and air, are merely stagnant wells, emitting foul odors and disease. Under the present law, the Committee states, in a block covered with flat houses only 10 feet need be left open in the rear of each lot, and a like 10 feet on the rear of the lot on the next street would give a space of but 20 feet for both rows of houses. The other 15 per cent. of area required to be left open by the law is taken up in the space allowed for the air shaft, which is usually five feet wide and about 60 feet long, closed at both ends; and this dismal, Egyptian-like well hole must, if the apartment houses be five stories in height, as the majority are, furnish light and air to 50 inside rooms, usually used as sleeping apartments. A marked contrast to this condition of affairs is presented by the Riverside model tenements, which are so constructed that in the centre of the blocks are large courts measuring 150 by 250 feet, which are fitted up as playgrounds for the children. All the rooms are well supplied with light and air, and in the Riverside Court a band plays on summer evenings. Notwithstanding all the expenditure, the owner is realizing five per cent. on his investment. In his remarks the Governor gave assurance that any bills having for their object the betterment of existing conditions in the homes of the working classes would meet with hearty co-operation at Albany, and Dr. Gould, who is president of the City and Suburban Homes Company, in speaking upon the commercial side of the question, showed that model tenements pay from four and one-half to six and seven per cent. on the money invested.

A LECTURE ON SURGICAL SPLINTING.

ON Wednesday, February 14th, a clinical lecture on the subject of "Surgical Splinting" was delivered by Dr. Edward A. Tracy, of Boston, before the New York School of Clinical Medicine. The lecturer treated his subject from a purely practical point of view, and illustrated by demonstration a method of splinting found advantageous in the treatment of fractures and joint injuries and diseases. The use of manufactured splints was condemned, they being but a poor makeshift for the skill which the surgeon should have at his fingers' end. Such splints require padding and this renders nugatory their fixative properties. Normal limbs are not alike, and the idea of making them conform to the shape of a ready-made splint is not surgical.

A word was spoken about the plaster-of-Paris treatment of fractures, and it was urged that when this method be employed the necessary care should be taken to prevent its harmful results, so frequently manifest in practice from lack of such precautions.

The lecturer devoted considerable time to describing the method of moulding splints directly upon the patient, and emphasized the use of wood-plastic material for the purpose. Its advantages are its strength, porosity, lightness, durability and cheapness. Four easily constructed splints were described, a splint for the wrist, one for the shoulder, one for fixation of the knee-joint, and one for leg fractures. When speaking of the wrist splint he referred to its important use in the treatment of Colles's fracture. The subject of Colles's fracture was enlarged upon and the desirability of following Moullin's advice to practise early passive motion of the fingers and wrist-joint insisted upon.

A PLAGUE LABORATORY.

THE St. Petersburg Institute of Experimental Medicine has, according to the *Medical Press*, just completed the construction of a laboratory for the study of plague and the preparation of anti-plague serum which is probably unique of its kind. The building is situated within the fortress of Cronstadt, and is surrounded by water on all sides so that it is completely isolated. It is provided with stabling for twelve horses, and apartments for the staff and the assistants; there is even an isolation ward for the reception of any of the employés who may be unfortunate enough to contract the disease. It is self-lighted by electricity and communication with the mainland is secured by a small steam launch. No doubt the lamentable catastrophe at Vienna which startled the scientific world a few months since suggested these elaborate precautions. Such a laboratory is indeed as potentially dangerous in its way as a powder magazine, possibly even more so, because there still exists the theoretical risk of the conveyance of infection. It would, however, be difficult to suggest any further precaution short of condemning the staff to perpetual banishment on their island.

ANTONIO MACEO'S SKULL.

THE *Revista de Medicina y Cirugía* of Havana publishes an "anthropological study," by Dr. Montalvo, Dr. de la Torre and Dr. Montane, of the skull of the Cuban patriot, Antonio Maceo. The most noteworthy point is the existence of an interparietal, or, as it is sometimes termed, an "inca" bone, from the theory that it was universal amongst, and distinctive of, the old Peruvian race. This, however, was shown by Anoutchine to be erroneous, for after examining many thousands of skulls in various museums he found the bone in only 6.8 per cent. in Peruvians, in 1.5 per cent. in negroes, and in 1.3 per cent. in Americans. Maceo was, of course, of mixed race. The general character of the cranium approximates to that of the white race and indicates a man of remarkable capacity. The rest of the skeleton inclines more to the negro type and shows that he must have been a man of Herculean strength.

Correspondence.

A CENTENARIAN.

CLAREMONT, N. H., February 13, 1900.

MR. EDITOR: — I have been a subscriber to the *Boston Medical and Surgical Journal* for more than forty years. Recently I have seen reported several centenarians in the JOURNAL. I send you another centenarian and you can do what you think best with it.

Nathaniel B. Cross, born in New Salem, N. H., February 13, 1800. He is one hundred years of age to-day; eyesight sufficiently good to enable him to walk several miles about the streets daily; step very elastic; very erect; weight, one hundred and thirty-five pounds; has not taken liquor nor used tobacco for fifty years; he has no organic diseases; intellect clear; hearing excellent; sings; no tremor in voice. Mr. Cross resides in Claremont, N. H., with his daughter, Mrs. Babcock.

Yours truly,
A. R. CUMMINGS, M.D.

METEOROLOGICAL RECORD

For the week ending February 10th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		We'th'r.*		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S....4	29.99	34	48	20	64	81	72	S.	S.	8	9	O.	R.	
M...5	29.46	37	47	27	96	56	76	N.W.	N.W.	20	24	R.	C.	.75
T....6	30.06	31	39	23	48	66	57	S.W.	W.	7	12	O.	C.	
W...7	30.36	31	37	25	68	73	70	N.	S.	6	5	C.	C.	
T....8	30.12	36	39	33	86	98	92	S.E.	E.	2	11	O.	R.	.29
F....9	30.14	38	43	34	96	85	90	S.E.	N.W.	20	14	R.	O.	.38
S...10	30.28	32	36	29	61	52	56	N.	N.E.	11	6	O.	O.	
☛							†							1.42

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., thunderstorm; N., snow. † Indicates trace of rainfall. ☛ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, FEBRUARY 10, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Scarlet fever.	Measles.
New York	3,654,574	1481	495	24.08	22.47	1.19	1.61	2.73
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	—	—	—	—	—	—	—
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	215	71	28.78	15.18	6.44	3.68	.46
Baltimore	506,389	231	68	15.91	21.04	2.15	—	—
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	114	50	24.36	16.53	1.74	2.61	.87
Washington	277,000	122	32	5.67	23.49	1.62	.81	—
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	38	23	45.46	56.28	8.04	—	10.72
Nashville	87,784	34	11	5.88	35.28	—	—	—
Charleston	65,165	35	10	2.85	5.70	—	—	—
Worcester	111,732	50	19	14.00	12.00	4.00	—	—
Fall River	103,142	34	16	8.82	29.40	—	—	—
Cambridge	92,830	18	9	—	22.22	—	—	—
Lowell	90,114	28	12	—	25.00	—	—	—
New Bedford	70,511	22	9	12.45	24.90	—	—	—
Lynn	68.218	—	—	—	—	—	—	—
Somerville	64,394	11	1	18.18	—	—	—	—
Lawrence	59,072	25	8	12.00	4.00	4.00	—	—
Springfield	58,299	14	4	28.56	21.42	7.14	7.14	7.14
Holyoke	44,510	15	8	26.66	13.33	6.66	—	—
Brockton	38,759	13	1	15.38	30.76	7.69	—	—
Salem	37,723	9	5	—	33.33	—	—	—
Malden	36,421	10	2	10.00	20.00	—	—	—
Chelsea	34,235	17	1	29.40	—	—	—	—
Haverhill	32,651	6	1	33.33	16.66	—	—	—
Gloucester	31,426	10	2	40.00	—	—	—	—
Fitchburg	30,523	10	5	—	50.00	—	—	—
Newton	30,461	10	1	30.00	—	—	—	—
Taunton	28,527	13	4	7.69	15.38	—	—	—
Everett	28,102	6	—	16.66	50.00	—	—	—
Quincy	24,578	5	1	20.00	—	—	—	—
Pittsfield	23,421	—	—	—	—	—	—	—
Waltham	22,791	4	—	25.00	25.00	—	—	—
North Adams	21,583	3	1	33.33	—	—	—	—
Chicopee	18,316	6	4	16.66	—	16.66	—	—
Medford	17,190	16	5	43.75	18.75	6.25	—	—
Newburyport	15,636	3	1	33.33	—	33.33	—	—
Melrose	14,721	6	3	16.66	—	16.66	—	—

Deaths reported 2,649; under five years of age 887; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 582, acute lung diseases 552, consumption 279, diphtheria and croup 103, measles 49, diarrheal diseases 32, scarlet fever 32, typhoid fever 28, whooping-cough 24, erysipelas 23, cerebrospinal meningitis 11.

From scarlet fever New York 23, Boston 8, Pittsburg and Springfield 1 each. From typhoid fever New York and Pittsburg 10 each, Boston 3, Malden and Washington 2 each, Baltimore 1. From whooping-cough New York 17, Boston, Pittsburg and Providence 2 each, Baltimore 1. From erysipelas New York

12, Boston 2, Baltimore, Somerville, Lawrence and Taunton 1 each. From cerebrospinal meningitis New York 5, Boston, Baltimore, Worcester, Gloucester, Newton and Medford 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,206, for the week ending February 3d, the death-rate was 21.2. Deaths reported 4,719: acute diseases of the respiratory organs (London) 432, whooping-cough 121, diphtheria 110, measles 83, diarrhea 40, fever 38, scarlet fever 33, small-pox (Hull) 2.

The death-rates ranged from 12.6 in Derby to 35.4 in Sunderland: Birmingham 25.0, Bradford 19.5, Cardiff 15.6, Gateshead 19.1, Hull 25.8, Leeds 23.1, Liverpool 28.5, London 19.6, Manchester 25.7, Newcastle-on-Tyne 22.0, Nottingham 18.3, Portsmouth 16.6, Salford 26.2, Swansea 15.3, West Ham 14.4, Wolverhampton 31.4.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING FEBRUARY 17, 1900.

M. H. SIMONS, medical inspector, commissioned medical inspector from September 24, 1899.

H. WELLS, medical inspector, commissioned medical inspector from January 15, 1900.

M. H. SIMONS, medical inspector, detached from the Naval Recruiting Rendezvous, New Orleans, La., and ordered to the "Philadelphia" as fleet surgeon.

T. H. STREETS, medical inspector, detached from the "Philadelphia" as fleet surgeon, on reporting of relief, and ordered to the New York Navy Yard.

J. C. ROSENBLEUTH, passed assistant surgeon, ordered to the Naval Recruiting Rendezvous, New Orleans, La.

H. N. T. HARRIS, surgeon, commissioned surgeon from October 21, 1899.

KARL OHENSORG, assistant surgeon, appointed from January 27, 1900.

G. L. BARBER, passed assistant surgeon, ordered to the "Kearsarge," February 20, 1900.

D. G. BERRE, assistant surgeon, detached from the "Petrel" and ordered to Port Isabella.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING FEBRUARY 15, 1900.

CARTER, H. R., surgeon. Upon expiration of leave of absence to report at Washington, D. C., for special temporary duty. February 13, 1900.

GLENNAN, A. H., surgeon. To proceed to Mobile, Ala., as inspector of unserviceable property. February 9, 1900. To proceed to Searcy, Ark., for special temporary duty. February 15, 1900.

MCINTOSH, W. P., surgeon. To proceed to Pensacola, Fla., for special temporary duty. February 9, 1900.

ROSENAU, M. J., passed assistant surgeon. To proceed to Philadelphia, Pa., for special temporary duty. February 9, 1900.

CUMMING, H. S., passed assistant surgeon. Granted leave of absence for fourteen days from February 21st. February 9, 1900.

TABB, S. B., assistant surgeon. Granted extension of leave of absence for fourteen days on account of sickness. February 14, 1900.

BURFORD, HUGH, acting assistant surgeon. Granted leave of absence for two weeks from February 15th. February 10, 1900.

KEYES, J. M., acting assistant surgeon. Granted leave of absence for sixty days from January 15th. February 10, 1900.

MONCURE, J. A., acting assistant surgeon. Relieved from duty at Gulf Quarantine and directed to proceed to South Atlantic Quarantine Station for duty and assignment to quarters. February 15, 1900.

SOCIETY NOTICES.

SUFFOLK DISTRICT MEDICAL SOCIETY.—The Section for Obstetrics and Diseases of Women will meet at 19 Boylston Place, Wednesday, February 28, 1900, at 8 P. M.

Papers: Dr. C. G. Cumston, "The Pathology and Symptomatology of Acute Pelvic Suppuration in Women and Treatment by Vaginal Colpotomy."

Dr. E. H Stevens, of Cambridge: "Parturition Complicated with Suppurating Fibroids."

Dr. E. S. Boland: "Immediate Repair of Perineal Tears."

R. A. KINGMAN, M.D., *Chairman.*
C. H. HARE, M.D., *Secretary,*
285 Marlborough Street.

INTERNATIONAL CONGRESS OF MEDICAL ELECTROLOGY AND RADIOLOGY. — At the request of the French Society of Electrotherapy and Radiology, the International Congress of Medical Electrology and Radiology, the initiative of which it has taken, is connected to the International Congress of 1900. This Congress will take place in Paris from the 27th of July to the 1st of August, 1900. All inquiries for further information must be forwarded to Prof. E. Doumer, General Secretary, 57 Rue Nicolas-Leblanc, Lille. Adhesions are to be sent to Dr. Moutier, 11 Rue de Miromesnil, Paris.

PROF. E. DOUMER, *General Secretary.*

UNIVERSITY OF PENNSYLVANIA MEDICAL CLASS OF '75.

The Executive Committee of the Society of Alumni has appointed the undersigned to endeavor to secure a reunion of the Class of '75 at the coming Commencement in June. Members of the Medical Class of 1875 who may see this are requested to send at once to me their present addresses and some brief account of their doings since graduation As many as possible of the class are urged to be prepared to come to a social gathering to celebrate its twenty-fifth anniversary.

CHARLES W. DULLES, 4101 Walnut St., Philadelphia.

RECENT DEATHS.

WILLIAM HENRY HOWE HASTINGS, M.D., M.M.S.S., died in Boston, February 16, 1900.

WOOLSEY HOPKINS, M.D., of New York, one of the assistant surgeons of the aural department of the Manhattan Eye and Ear Hospital, died on February 14th, of pneumonia. He was a graduate of the College of Physicians and Surgeons, New York, and thirty-five years of age.

EDWARD LORENZO HOLMES, M.D., former president of Rush Medical College, Chicago, died in Chicago, February 11th. He was born January 28, 1828, at Dedham, Mass., was educated at Harvard College and the Harvard Medical School, and was thereafter an interne at the Massachusetts General Hospital. His main work later in life was with the specialties of eye and ear.

BOOKS AND PAMPHLETS RECEIVED.

Mountain Fever. By E. Stuver, M.D., Fort Collins, Col. Reprint. 1899.

Ueber Ichthyolvasogen bei Gelenkaffectionen. Von Prof. Dr. G. Edlefsen in Hamburg.

Annual Reports of the President and the Treasurer of Harvard College, 1898-99. Cambridge. 1900.

The Phonographic Record of Clinical Teaching and Medical Science, Vol. VI, No. 2, February, 1900.

The Minor Surgery of the Nose and Throat. By George L. Richards, M.D., Fall River, Mass. Reprint. 1899.

Bad-Nauheim: seine Kurmittel, Indicationen und Erfolge. Verfasst vom Verein der Aerzte zu Bad-Nauheim. 1899.

Le Lesioni Traumatiche dei Centri Nervosi. Memoria, Onorata del Premio Riberi pel 1898. Roma: Presso Il Giornale Medico. 1900.

The National Recognition of Eye-Strain Reflexes. By George M. Gould, M.D., and Helen Murphy, M.D., Philadelphia, Pa. Reprint. 1899.

Gynecology, a Manual for Students and Practitioners. By Montgomery A. Crockett, M.D. Edited by Bern B. Gallaudet, M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co.

Golden Rules of Physiology. By Walker Hall, M.B., Ch.B. (Vict.), and Ackworth Menzies, M.D., C.M. (Edin.). No. VI. Bristol: John Wright & Co. London: Simpkins, Marshall, Hamilton, Kent & Co., Ltd.

The International Text-Book of Surgery. By American and British authors. Edited by J. Collins Warren, M.D., LL.D., and A. Pearce Gould, M.S., F.R.C.S. Vol. I. Illustrated. Philadelphia: W. B. Saunders. 1900.

Nervous and Mental Diseases, a Manual for Students and Practitioners. By Chas. S. Potts, M.D., Instructor in Nervous Diseases. Edited by Bern B. Gallaudet, M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co.

International Clinics: a Quarterly of Clinical Lectures on Medicine, Neurology, Surgery, Gynecology, Obstetrics, Ophthalmology, Laryngology, Pharyngology, Rhinology, Otology and Dermatology, etc. By professors and lecturers in the leading medical colleges of the United States, Germany, Austria, France, Great Britain and Canada. Edited by Judson Daland, M.D., Philadelphia. Vol. IV, Ninth Series. Philadelphia: J. B. Lippincott Co. 1900.

Retinitis Pigmentosa without the Characteristic Pigmentation, a Report of Two Cases. The Duties and the Dangers of Organization in the Nursing Profession. Concerning Corpuscular Phases and Aphases. A Fallacy of the Rest-Cure Treatment. Habit-Disease and the Tobacco-Habit. Massage and the Relief of Eye-Strain in the Treatment of Glaucoma. Medical Paleography. The Esthetic Relations of Medicine and Life. The Story and Lessons of an Unknown Hero's Life. By George M. Gould, M.D., Philadelphia. Reprints. 1897-99.

Original Articles.

VIVISECTION IN HARVARD MEDICAL SCHOOL.— A REPLY.

BY JAMES J. PUTNAM, M.D., BOSTON,
Professor of Diseases of the Nervous System, Harvard University.

It is well known that a bill to restrict experimentation on living animals was brought before the Massachusetts Legislature several years ago and was rejected after a number of full and impartial hearings, in which the attempt was vainly made to show that abuses existed in the work of our higher educational institutions. This year the same effort is being renewed, and should be opposed, not only by professional investigators but also by physicians and laymen who are conscious of the debt that the community owes to those who labor in the important fields of physiology and experimental pathology.

One of the most liberal of the supporters of the previous movement, Dr. Leffingwell, has recently distributed again, in pamphlet form, under the caption "Does Science Need Secrecy?"[1] a letter originally published in the *Boston Transcript* of September 28, 1895, as a reply to one by Professor Porter, of the Harvard Medical School, which had appeared two days before, and in it he makes a number of statements which should not be allowed to pass without notice, the more so because the fact is ignored that some of them had already been publicly shown to be erroneous. It seems to be as inevitable as it is unfortunate that the discussion should become public, — unfortunate, because so many persons in the community have shown themselves, again and again, ignorant of the value of the ends which are sought, and therefore unable to recognize how amply they justify the means that are used to gain them.

My objection to Dr. Leffingwell's pamphlet is not that it is critical but that it is unjust. It is an attempt to make it appear that men intentionally deceive who do not intentionally deceive; that men are cruel who are not cruel; that systems are in vogue which are not in vogue; that suffering is inflicted which is not inflicted; that the practical results of physiological research are of trivial value, whereas without them the splendid edifice of medical science could never have been built. The "practical" physicians who are so proud of the fact that they have exchanged the ignorant and brutal empiricism of the past for treatment based on a relatively accurate knowledge of the body in disease and health owe that knowledge, to an extent they often fail to realize, to the discoveries of these men, which have been incorporated like the "water of crystallization" into the working forces of the medical art.

It must not be forgotten by those who hold that it is wholly wrong to seek knowledge through experimentation on living animals (though we may make them suffer pain for our protection, our sport, our convenience, and our food), that Dr. Leffingwell is himself an avowed supporter of such experiments.

He says[2] "As a physician, I have never been able to go to the extreme of denouncing all experimentation upon animals whatever, even though from first to last no pain be felt. Between the total abolition of all sacrifice of animal life for scientific purposes demanded by many humanitarians and that absolute freedom to inflict torture without restraint claimed by some physiologists, there must be a middle ground." In another place he says,[3] "I am not an antivivisectionist, for I believe in the practice, when it is rigidly guarded against all abuses, limited to useful ends, and subject to public criticism and the supervision of the law."

No physiologist, so far as I know, claims freedom to "inflict torture" either with or without restraint: so that the main difference between Dr. Leffingwell's position and that of his colleagues with whom he disagrees is that he thinks the best safeguards against abuse, and the best way of limiting experimentation to "useful ends," to be "public criticism and the supervision of the law," while we trust far more in the character, traditions and training of the men who have this serious and important work in charge. If Dr. Leffingwell were only carrying out, as a practical physiologist, the carefully guarded experiments which he sanctions, he would be more ready to see the value of this latter guarantee, and less ready to endorse by implication the accusations of cruelty which he knows his pamphlet will lead the thoughtless public to bring against these men, in spite of their honorable records. Do these recitals, which, to those who read them, paint a scene of horror, really help the untrained reader to form a fairer judgment?

> "Judge the people by their actions,
> Is a rule we often get;
> Judge the actions by the people,
> Is a nobler maxim yet."
> — JAMES FREEMAN CLARKE.

If there is any subject that public-spirited men should treat soberly and dispassionately at the present day it is surely this subject. For every one must admit that within the past fifty years there has been a vast and rapid change in sentiment throughout the civilized world with regard to the infliction of pain, and that now and then the new wave takes on the character of an inundation. The bare mention of "abuses" in prisons, in asylums, in schools, in army discipline, excites a rush of indignation based on vague pictures of the days, not so long distant, when prisoners and witnesses were put to torture, and knowledge was conveyed at the rod's end, and lunatics were chained and punished. For this reason it is easy for leaders of reform, if they are willing to use such methods, to change a noble and useful sentiment into an hysterical and undiscriminating passion. And this is what is done when in the reckless determination to enlist public sentiment it is made to appear that the methods used by the most humane American physiologists are no better than those used by the least humane European physiologists; or that the customs which marked the research of half a century ago are the customs of to-day; or when by any means an uninformed public is encouraged to believe that our medical schools are dens of iniquity. Those who write upon these subjects are bound to hold themselves responsible not only for the words they use, but for the sense, so far as they can foretell it, in which their words will be taken.

It is not easy to realize, until one looks at the matter closely, what a powerful and even unreasonable influence this feeling has become. Anglo-Saxon communities are peculiarly affected by it, and the public

[1] Fifteenth thousand. Does Science Need Secrecy? A reply to Professor Porter and others of Harvard Medical School, by Albert Leffingwell, M.D., Cambridge, Mass.; with statement concerning Vivisection, by Prof. W. T. Porter.
[2] Leaflet, Does Vivisection Need Concealment?
[3] Reply to Dr. Porter, p. 21.

has therein a stronger guarantee against physiological cruelty than any law could secure. Most of us approve of taking the life of animals for food, but even this is permitted only with the tacit understanding that the details shall be kept from our shrinking sight and ears. This is a pardonable sort of cowardice, but other forms are less pardonable.

It must indeed be admitted that indifference to others' pain is to be found everywhere, even in every home. But it is daily becoming rarer, and there is no country in the world where it is so rare as in ours. Let no one suppose that the flood of modern compassionateness and sensitiveness to the suffering of man and animals has left untouched the students and teachers of physiology. Humane physiologists would be as glad as any one could be, no doubt, to see the abolition of cruelty and the abolition of pain. But they are in better position than most persons to realize that their labors tend to the abolition of pain, both of men and animals, by increasing our knowledge of the conditions which underlie health and disease.

For my own part, although not a physiologist, I have been for more than twenty-five years a frequent, and at times a constant, visitor at the Harvard physiological laboratory, and familiar with the men who have raised it to its present position of usefulness, and the contrast between the impressions which I have received and those suggested by Dr. Leffingwell's pamphlet is so striking that I feel bound to testify to the untruthfulness of the picture which the latter draws.

No one would assert that in a quarter of a century there have been no instances of thoughtlessness, or that nothing has been done which has given cause for regret. Yet no unprejudiced observer could see a year's work at the laboratory without being compelled to admit, after due study of the conditions, that he had seen no evidence of real abuses, excesses, cruelty, or even of any considerable suffering. More and more effort has been made to increase the comfort of the animals, and they are now cared for in commodious quarters, and are removed from influences, such as solitary confinement, which might excite vague impressions of danger. They live as comfortably as those kept in well-regulated menageries or circuses.

I know, also, from conversation with Professor Bowditch, that he has studiously avoided, for many years, the class of experiments referred to by Dr. Porter in his letter as being distinctively "painful, and yet needing to be done without anesthetics."

It is obvious that the best sources of information as to the amount of pain suffered by animals used for the purposes of experimentation are the hospitals where men and animals receive surgical treatment; for the operations done by the surgeon are closely parallel, so far as the infliction of pain is concerned, to those done by the physiologist. Any unprejudiced person who will visit such a hospital will find that signs of severe pain are rare, and that the animals suffer much less than men. I do not, of course, refer to the suffering from the diseases for which the operations are done, but only to that which the operations induce.

Operations on the internal organs usually cause but little pain, so that, for example, as I have learned by personal inquiry, no anesthetic is needed, from first to last, for the removal of the ovaries from the mare, or other large animals, unless temporarily, if the skin has to be cut. Horses' teeth are usually pulled without an anesthetic, and I am told by a prominent veterinary surgeon that although this operation takes a relatively long time and requires the use of great force, yet the horse is so little affected by it that he instantly afterwards begins to eat, as if nothing had happened. This is worth remembering in connection with incidents like that reported by Dr. Bowditch in his address.[4]

Where operations requiring an anesthetic are to be done upon horses, chloral is commonly chosen, instead of ether, because of the struggling which the latter induces, and it is found that when a large dose of chloral is given the animal may sleep quietly through the entire period.

The operations of surgery are closely parallel to those of physiology, but the surgeon has few or no critics because the community understands and sympathizes with his aims. It excites no denial when the statement is made that patients suffer but little after even severe operations. Let it be assumed, however, for argument's sake, that this sympathy did not exist, and let the reader consider whether a description like the following would aid or would hinder him in the formation of a just opinion. "Of what use is it that you, the self-interested surgeon, tell us that the struggles of your half-etherized patient at the first plunge of the knife, the turgid and purple face, the groans and cries, are not indications of pain? You cannot persuade us that after these terrible mutilations of the deeper organs and cavities of the body, in which blood flows in torrents; this tearing out of the sensitive nerves of the face; these deep sections and lacerations of the brain and spinal cord; this crushing and scraping of diseased bones; that after these prolonged abominations the patient wakes in comparative comfort and indifference. We will not believe that the surgical wards of a hospital are habitually the abodes of cheerfulness; that the brain and most of the internal organs are nearly devoid of sensitiveness; that patients who have had injuries of the head involving serious destruction of the delicate mechanism of the parts within, or complete destruction of the spinal cord, may lie wholly conscious yet practically without pain, and not needing any anesthetic." Yet these statements are true, and it is also true that the work of the surgeon is the analogue and the counterpart of the work of the physiologist, but with the difference that the surgeon deals with the most sensitive and highly organized animal known, while the physiologist deals with those far lower in the scale of capacity for pain.

Let us look a little more closely at some of the special reasons that made it seem to Dr. Leffingwell so necessary to bring these charges against our teachers and our college.

I. He says (page 10): "In the first place Professor Porter does not well when he denies (as he seems to do) that the practice of experimentation upon living animals has ever led to abuse."

Dr. Porter's letter contains no such denial. It would have been an idle and uncalled-for statement, and one such as no one would think of making, even for surgery. Dr. Porter's letter was written to defend the experimentation which he and the Harvard Medical School represent from the terrible abuse which had been poured upon it, and if any reader doubts whether he was not within the mark in speak-

[4] At the annual meeting of the Massachusetts Medical Society in 1896, Prof. H. P. Bowditch gave an address on The Advancement of Medicine by Research, which was printed in the Boston Medical and Surgical Journal for June 11 and 18, 1896, and can now be obtained, with appendix, in pamphlet form.

ing of the "long-drawn lists of atrocities that never existed," let him study the records of the hearings before our own Legislature; let him even read Dr. Leffingwell's own pamphlet, and see if he thinks the expression overdrawn.

II. In the next section grave distrust is expressed as to the truth of Dr. Porter's words (reiterated by Dr. Bowditch at the legislative hearings) as to the work at the Harvard laboratory being done "within open doors," and the counter statement is made that "no feudal castle of the Middle Ages was ever more rigidly guarded against the entrance of an enemy than physiological laboratories are secured against the admission of unwelcome visitors." As a matter of fact, the agents of the Society for Prevention of Cruelty to Animals have several times called and witnessed experiments, with Dr. Bowditch's full consent, and he authorizes me to say that any one who applies in a spirit of serious inquiry will be welcome in the future as in the past.

Possibly some reader of Dr. Bigelow's address of 1871, of which such liberal use is made, may think that through him they obtain a real look behind the closed doors of the Harvard laboratory, and for that reason I pause to call attention to the fact that when this address was delivered the Harvard laboratory did not exist, and that Dr. Bigelow's knowledge of vivisection was derived entirely from acquaintance with the French methods of half a century ago. To him, however, at least, the doors of our laboratory were surely never closed, and yet it is not known that either in private or public he ever made a protest against its establishment or its development, or uttered an unfavorable criticism of any act done within its walls. Moreover, this laboratory was established at a time when Dr. Bigelow was the most influential member of the Faculty, and it could hardly have been established without his consent. Thousands of students, since that day, have passed through the Medical School, with full power to know every detail of the work of the physiological laboratory, and no one of them has been found ready to endorse any charge of wanton cruelty, or the other statements contained in Dr. Bigelow's address.

III. In the name of scientific accuracy, Dr. Porter is taken to task for his statement that through the discovery of the tetanus antitoxin tetanus is taken out of the list of incurable diseases. Dr. Leffingwell points out that many patients with tetanus used to recover before this discovery was made, and that even in spite of it many now die. Both of these facts are too well known to have needed restatement by either writer, and Dr. Porter's remark, in the sense in which it was obviously written and in which any candid reader would understand it, is certainly correct. Before the use of tetanus antitoxin a great many patients with tetanus recovered, it is true, but the physician stood almost helpless. He could sometimes mitigate the symptoms a little by narcotics, and could help sustain the patient's strength, and that was all. But with the discovery of antitoxin the treatment of this terrible disease entered on a new phase. Henceforth, and for the first time, the disease could be met by a rational weapon, and the actual accomplishment, though far less, when Dr. Porter wrote, than it is now, seemed even then the earnest of a far greater accomplishment in the future. The "disease" had been shown not to be "incurable," and the demonstration was one to call for grateful rejoicing. Dr. Leffingwell's criticism appears all the more unwarrantable when it is remembered that Dr. Porter obviously referred to the antitoxin of tetanus only as one of various agents by which physicians, under the lead of the experimental physiologists and pathologists, are now able to make some head against contagious disease. He might equally well have chosen the diphtheria antitoxin for his example, and would then have had a more impressive array of statistics to drive his argument home. Virtually, however, the two cases are parallel. Many patients with diphtheria used to recover; some still die in spite of antitoxin; and there are not wanting authorities who could be cited as disbelieving in the new treatment, by any one that wished to minimize its importance. Yet there is now a great flood of testimony to its value, prominent among which is that from the contagious wards of our City Hospital.

Under IV and V, Dr. Leffingwell deals with the question of "anesthetics" and "narcotics," and denies the justice of the claim which Dr. Porter makes, that animals are kept from suffering any considerable[5] pain, by such means, when operated on at the Medical School. Here, again, the difficulty of securing from any large number of people the same consideration for the physiologists' view that is accorded freely to the arguments of its opponents is so great as to justify a special appeal to those who would be fair to let careful thought and study precede judgment. The argument is that ether and chloroform are the only true "anesthetics"; opium and chloral being "narcotics, which excite a degree of torpor, though they do not prevent pain"; while curare only paralyzes movement and does not affect sensibility at all.

These statements contain truth, yet not the whole truth, nor do they show that Dr. Porter's remarks, if taken in the sense in which they were obviously intended, are untrue.

Curare, to begin with, does, in large doses paralyze the sensory nerve-endings,[6] and is likely, even in smaller doses, to blunt their excitablity.

Apart from this, however, I have Dr. Bowditch's authority for saying that curare is rarely employed nowadays[7] at our laboratory, except in conjunction with other anesthetics, or where a non-painful experiment was to be done which would nevertheless be interfered with by accidental movements.

The object of giving the curare is obviously misunderstood by Dr. Leffingwell and those who write in his mood. The very mention of the word excites indignation, and it is generally believed that it would never be used but to prevent the struggles of an animal in pain. This sentiment finds expression, among other places, on page 4, where he discusses the statement originally made, I believe, by Ludwig, and cited by Mosso in the biography of his great teacher, to the effect that many experiments would be made impossible by the occurrence of pain.[8] Dr. Leffingwell rejoins that it is not the pain which interferes with the

[5] I insert the last two words as expressing more accurately what I believe to have been Dr. Porter's meaning, and as, at any rate, illustrating my own.

[6] See, for example, T. Lauder Brunton's Pharmacology, Therapeutics and Materia Medica.

[7] Mention was made in the earlier part of the paper of a class of experiments which are not now made.

[8] I do not quote the exact expressions used, partly because I have not had access to the original, but mainly because I am not undertaking to defend Mosso but simply trying to explain a physiological misunderstanding.

experiment, but the movements which the pain excites, and says: "What the Italian physiologist might truthfully have written was this: 'It is an error to believe that physiological experiments requiring the aid of delicate instruments can be performed upon an animal which is not made incapable of muscular effort.'"

This is not at all what either Ludwig or Mosso meant. It was not the movements, but the pain as such, reacting, as pain always does, on the delicate mechanisms of respiration and blood pressure, and the heart's action, which, if present, would have seriously interfered with the careful study of those important functions, and any one who chooses to look into the matter will find this to be the case. The occurrence of pain would have been fatal, likewise, to the success of some of Dr. Porter's experiments on the respiratory nerves, which Dr. Leffingwell criticises.

When curare is used after or during etherization, as in some of the experiments cited, it is because the painful parts of the operation are only at the beginning. For the later stages it is only necessary to use some means of preventing the movements which the animal would make involuntarily or spontaneously on coming out of ether, and which would render the desired observations impossible.

V. It is necessary to turn next to the consideration of the kindred and yet different question, namely, whether it is true that a fundamental difference exists between "anesthetics" (ether and chloroform) and "narcotics" (morphine and chloral), using the terms in Dr. Leffingwell's sense.

The best answer is that it is a matter of common knowledge that both morphine and chloral relieve pains of every sort, and they would unquestionably be "used by the surgeon" for operations, if ether and chloroform were not, for obvious reasons, better adapted to that special purpose.

Dr. Leffingwell insists, on the basis of his citations, that narcotized animals continue to feel. I wish it to be understood, however, that, even if this be true, to feel is not necessarily to suffer. A hypnotized person, to whom it has been successfully "suggested" that the pricking or cutting of his skin will not cause pain, may "feel" what is done to him but he does not "suffer." Similarly, when a person is even heavily poisoned by morphine, so that he is wholly indifferent to most excitations, an especially powerful stimulus will excite a momentary jerk or movement of resistance, quite sufficient to show that his muscles are not paralyzed and that his nerves still conduct impressions. On the other hand, his whole demeanor and his testimony after recovery prove that he was incapable of "suffering."

A few words must be said about the *dose* of chloral used by Dr. Porter. It is certainly the case that rabbits can bear a much larger dose than one-tenth gramme without death, but it must not be forgotten that this quantity would be equivalent to something like sixty or seventy-five grains for an adult man, assuming that a man weighs about forty or fifty times as much as a rabbit. This would be a huge dose, and although rabbits are undoubtedly relatively less sensitive than men to this drug, yet a grain and a half is not for them an insignificant quantity.

Under Section VI, Dr. Leffingwell cites a portion of the details of experiments by Drs. Ott, Walton, Hooper, Ellis, Bowditch and Porter, to controvert the statement which the latter made about "painless experiments." I stated, at the beginning of this paper, that experiments wholly without anesthetics, or only with curare,[9] are not now made at our laboratory, and have not been made for many years, and for this reason I omit the discussion of Dr. Ott's investigations, the more so that I have had no opportunity to talk with their author about them.

On pages 16 and 17, Dr. Leffingwell cites the details of an experiment by Dr. Bowditch upon nerves, to show its painful character, though a moment's further reading might have shown him that the nerve was in each case severed from the brain, so that the "stimulation" of it was no more felt by the animal than the stimulation of an amputated limb would be felt by the patient from whom it came. The "curare" in this case was given not to prevent the struggles of a victim in pain, but to eliminate involuntary or spontaneous movements such as any animal, in pain or not, might make, and to prevent the nerve stimulation from causing muscular contractions which would have interfered with the observations on the circulation of the blood.

In Dr. Porter's experiments, also, it was the *peripheral* end of the phrenic nerve which was "seized and torn out of the chest," and before this was done the nerve had been rendered insensitive and incapable of conducting impressions of any kind, even if it were not a fact that the phrenic nerve is a nerve of motion and probably conducts no sensations of pain at all. Dr. Leffingwell might easily have ascertained that the "struggling denoted by the stars," did not occur at the moments when the supposed-to-be painful excitations were made, but corresponded to movements not associated with the excitations at all. He might have found, what Dr. Porter assures me was the case, that in the experiment with regard to which it was not stated that anesthetics were used, they were used as in the other experiments. Any physiologist, any reader, indeed, not seeking merely to find a new point of attack, would draw this obvious inference, or would have written to ask Dr. Porter with regard to the facts.

By similar inquiries Dr. Leffingwell would have found that Dr. Walton's experiments[10] caused but little pain, as surgical experience proves, and that they were undertaken to show that the surgeon, in removing the epiglottis, which sometimes must be done, can save his patient from serious difficulty in swallowing if he takes pains to limit his incision within a certain anatomical line which Dr. Walton points out on the basis of his experiments. Had he investigated further he would not have shown such ungenerous readiness to describe in detail Dr. Bowditch's "clamp," and couple therewith the suggestion that its use indicated the falsity of the statement that anesthetics were habitually employed, since then, he thinks, it could not be needed, for he would have found that it was primarily used as the best means of furthering the production and maintenance of etherization, and, next, as a convenient method for holding in a given position the fully etherized animal.

I shall not follow Dr. Leffingwell into further discussion of the details of these experiments. It is unfitting to paint such pictures for a public untrained

[9] Except as explained above.

[10] This statement is authorized by Dr. Bowditch, who conducted the investigation with Dr. Walton.

to estimate either the pain suffered or the good accomplished. Those who wish can find them where they are given, with no attempt at concealment, in the physiological literature of the world. Indeed, if the word of men so respected as Dr. Bowditch and Dr. Porter is no longer to be believed, and parties must be formed among the public, representing the two sides of this discussion, it would be desirable that every one who means to form an opinion should read these descriptions carefully and for themselves, not in extracts as part of a revolting picture painted by an unfriendly critic. We appeal, however, to right-minded persons who undertake this task and who value their own opinions and do not wish their consciences laden with the reproach of having helped to check a movement which exists not to increase but to diminish the sum of suffering in the world, to withhold their judgments until they have truly studied the subject of animal pain on the one hand and the position of physiology as a means of promoting the happiness of men and animals on the other. They may profitably begin by reading carefully a book published in London in 1883, called "Physiological Cruelty," from which Dr. Bowditch quoted in his admirable address before the Massachusetts Medical Society in 1896.

I have studiously avoided, in this paper, attacking Dr. Leffingwell's motives in any way that he could consider unjust. I accuse him of nothing but the thoughtlessness of fanaticism and ignorance. But to this charge he certainly is open when he uses the following statement for the sake of making it appear that the late Dr. F. H. Hooper was inhumane in his experimental work: "If one desires to see the picture of a dog 'thoroughly etherized or chloralized,' fastened immovably, its throat cut, and its larynx dissected out and tied up with a string — an experiment from the physiological laboratory of Harvard Medical School — let him consult one of Dr. Hooper's papers."

It is easy to imagine that this picture should excite such a feeling of horror among the ignorant as to deprive them of the power of judgment, but how it serves the interests of truth and fairness is not clear.

Is it possible that Dr. Leffingwell does not know that these animals, being under the effects of ether, felt these manipulations hardly more than a block of stone? Is it possible he does not know that practically the same operation, the removal of the larynx, and others far more likely to be painful, are done by the surgeon and without causing pain? What did he expect to be the effect of the remark that the larynx was "tied up with a string"? It was absolutely necessary for the experiment, and it certainly did not hurt the animal, but the reference to it as certainly did excite a feeling of unreasoning indignation against Dr. Hooper, such as it might have been thought that Dr. Leffingwell would have been glad to see eliminated from this discussion.

It may surprise those whose only acquaintance with Dr. Hooper has been through this reference to hear that he was a man of extremely kindly instincts and exceedingly fond of the animals most used for these experiments, one or more of them being his almost constant companions.[11] His keen interest in laryngology, fostered and guided by his physiological studies, had made him a leader in clinical work of the most practical kind. The day will surely come when the painful disease of which he died will yield its secrets to the researches of the pathologists and the biologists. May America not be behindhand in contributing to this great work!

It is difficult to believe that any thoughtful and liberal-minded person can suppose physiology to be able to thrive without the opportunity of verifying hypotheses by experimentation on living animals; or practical medicine to be able to thrive without physiology. It is only by painful and laborious effort that medicine can succeed in reclaiming for health the vast domain of disease, and no auxiliary can be spared that might make this conquest swifter or surer.

We do not want to see our medical schools reduced to third-rate institutions because unable either to teach adequately the first elements of medical knowledge, or to secure the only teachers who are worth having, the teachers who are likewise investigators. We do not want to see American research strangled or given over to inferior men, nor do we wish to see restrictions imposed which annoy without materially restricting.

Those of us who have been interested in noting what physiology has done for practical medicine, and in attempting to gauge fairly the amount of the pain to animals which this sort of research involves, believe that we can see the difficulties which laymen find in forming opinions, and can appreciate and admire the humane feelings which prejudice them against the physiologists. But we believe that they are laboring under serious misconceptions as regards the facts at stake. It is easy for them to understand the arguments of those who think that experimentation upon animals is wrong and painful; it is difficult for them, if they have not specially studied the subject, to appreciate the arguments for the other side. Every one is ready to assume, as a safe principle, and in the interests of humanity, that a manipulation which causes pain to a man causes the same pain to an animal, forgetting or overlooking the fact that the best criteria of real suffering are exhaustion, prostration of nerve force, incapacity for immediate exhibition of the usual appetite, the usual power of enjoyment, the usual interest in familiar occupations, and that, judged by these standards, vast numbers of acts from which men would suffer cause but little inconvenience to animals lower in the scale.

So, again, when the value of such experimentation is under discussion, it is easy for the untrained to appreciate the arguments of those who say that little or no good comes of it all, and practically impossible for them to recognize what is accomplished, unless they are willing to devote themselves with unbiased minds to a careful investigation of the question. And this they should feel bound to do before they lend their names and influence to help cripple a means of study which multitudes of men whom they must respect tell them has been of vast service to mankind.

The demand is often and naturally made that definite results of practical value should be pointed out as immediately flowing from each given series of experiments, and when it is replied that this is not always possible, the motive of "curiosity" is liberally suggested. But let any fair-minded person go to the laboratories of chemistry, or of physics, or to the as-

[11] Ludwig, also, who was Dr. Bowditch's teacher, and whom I had the privilege of knowing, not only won by his character and kindness the affectionate devotion of a host of friends and pupils, but earned the gratitude of his townspeople for many acts of public spirit, among which was the instituting of reforms in the treatment of horses.

tronomical observatories, and transfer his demand there, and he will perceive how irrational it was to have made it at all. How often does a single series of experiments in those departments lead to a brilliant discovery? Yet how few great discoveries would ever have been made but for the silent and patient investigations into minor problems that to the untrained observer often seem trivial and irrelevant. Let the motive be called "curiosity" if one chooses, but with distinct recognition of the fact that the "curiosity" of the man whose mind is filled with knowledge, and whose instincts are keen to divine the part that his work will play in the final structure, is one of the greatest forces of progress.

Many of these investigations, in every department, seem to turn out blind alleys, and to end for the moment in nothing. It is inevitable that this should be so, until men have infinitely greater powers than now wherewith to fathom the vast unknown. But discovery comes by study and only so, and many a failure, conscientiously interpreted, proves to be the fingerpost to an important truth. The splendid generalizations, like that with regard to the germ theory of disease, through which the practice of surgery and medicine has been revolutionized, are, to the lay mind, the most obvious triumphs of experimental research. But he who seeks out the sources from which practical medicine really derives its strength will be amazed to find that there are many other achievements just as important as these, though of a different order.

The difficulties in the way of medical progress are so great that practical physicians are under a constant temptation to cease trying to surmount them, and to let themselves degenerate into routine practitioners, or pure empiricists. Even the great geniuses would more often lead us astray, as they have repeatedly done in the past, were it not that the experimentalist is ever at hand to apply the touchstone of criticism or hold up the torch of inspiration and guidance. If the expression "A power behind the throne" was ever justified, it is justified as expressing the relation of experimental physiology and pathology to practical medicine.

It is obviously important that all this experimentation should be conducted according to the most humane sentiments of our day, but also in such a manner that each observation shall yield its due share of benefit, and not be wasted. Surely the best means of securing the observance of these conditions is to support our institutions of learning so that they can secure teachers and investigators with wisdom to desire the highest knowledge, and powers trained to find the surest path to reach it, and characters which would make them incapable of inhumanity. Many a person who is now trying to invent some ingenious method for hampering and hedging the work of the physiologist would recall with a feeling of shame how much suffering and calamity was brought upon this country during our Civil War by the attempts to rule the generals from Washington, and by the foolish clamor of those who wished the struggle abandoned because their narrow vision only let them see the present distress that it entailed. The war against disease is like any other war, and can only be carried on successfully with trained generals, supported by public opinion, and allowed to choose their own methods.

Is it legitimate to use experimentation upon living animals for the purposes of teaching as well as for the purposes of research?[12] There are many persons who would answer this question in the negative. But let it be remembered, on the one hand, that the students of to-day are the teachers and investigators of to-morrow; and, on the other hand, that even as fitting themselves to be physicians, the knowledge that they derive from actually seeing an experiment is of a wholly different order from that which they derive from hearing about it. Here, also, it is a question of how to make experimentation bear its fullest fruit. It should, of course, be remembered that, so far as warm-blooded animals are concerned, they are always in a state of anesthesia, and incapable of suffering considerable pain when the demonstrations are being made.

The study of medicine and physiology is no child's play. It is a serious business, and a good medical school should see to it that the men whom they graduate realize to the full the responsibilities and problems with which they are to come in contact. If they do this better for having had an important truth driven home by an ocular demonstration upon a narcotized animal, then the demonstration was worth making. The charge that students become hardened to suffering in this way is as baseless as the similar charge occasionally brought against surgeons.

It has not seemed possible, or desirable, to attempt in this paper to enter exhaustively into all the questions that suggest themselves to the mind in connection with this controversy; my main object has been to bear witness to what I have seen. I should like, however, to state that in my opinion the position of those who strive for "total prohibition" is hardly more unreasonable than that of those who, like Dr. Leffingwell, have temporarily joined hands with the total prohibitionists, but really wish only to see annoying restrictions imposed upon men hitherto trusted in all things.

The injustice of legislation like that now in force in England, which admits that experimentation on living animals is justifiable, but attempts to substitute for the conscience and knowledge of the trained investigator the judgment of men no better or wiser than himself and infinitely less well equipped for estimating the probable value of his work, recalls the prolonged attempt to establish a censorship of printing, against which Milton wrote, in 1644, his eloquent protest, "Areopagitica; Defense of the Liberty of Unlicensed Printing." I recommend to every lover of liberty and progress the reading of his manly and invigorating plea.

CHRISTIAN SCIENCE IN MARYLAND. — A bill is now before the State Legislature of Maryland restricting the practice of medicine to duly qualified physicians, and providing that "any person shall be regarded as practising medicine within the meaning of this act who shall attempt to heal, operate on, or prescribe for any ailment of another." A public hearing held last week brought out a large number of Christian Science remonstrants. The wording of the bill is perhaps rather too comprehensive, though it will no doubt tend to suppress the practice of Christian Science.

---

[12] I do not refer, of course, in what follows, to the question of demonstrations in high and grammar schools, which have already, and very properly, been forbidden by law.

STRICTURE OF THE URETER A POSSIBLE RESULT OF LACERATION OF THE CERVIX UTERI, AND URETEROVAGINAL FISTULA A RESULT OF TRACHELORRHAPHY.[1]

BY E. C. DUDLEY, M.D., CHICAGO, ILL.

For purposes of illustration I offer the following history of a case. All details not belonging to the subjects under discussion are purposely omitted. The patient was thirty-seven years of age and married. The oldest child was twenty-one and the youngest one and a half years of age. Date of first consultation was March 29, 1899.

Subjective symptoms. — In addition to the usual symptoms of menorrhagia, mucopurulent uterine secretions, dysmenorrhea, vesical irritation, headache and nervousness, the patient, since the birth of the first child, twenty-one years before, had suffered from pain referred to the left inguinal region; this pain was of variable intensity, always annoying, often quite severe, and was the chief and significant subjective symptom.

Examination. — Examination of the pelvic organs, in so far as it relates to this discussion, gave the following results: Uterus symmetrically enlarged from endometritis and metritis, the canal measuring three and a half inches in length. Position of uterus normal. Bilateral laceration, great circular enlargement, cystic degeneration, erosion and eversion of the cervix uteri. The cervical laceration on the left side was extreme; it had extended far into the vaginal wall and parametria and had healed by much cicatrization. The perineum was lacerated to the sphincter ani muscle. Uterine appendages normal.

Operative treatment. — April 20, 1899. The cervix uteri and perineum were closed. The operation on the cervix was that of Emmet, as modified by Schroeder, and involved the resection of considerable tissue from the thickened lips. The denuded surfaces at numerous points were quite hemorrhagic, so that both in the cervix and perineum some difficulty was experienced in the control of hemorrhage.

Nine days after the operation there suddenly appeared dangerous hemorrhage from the vagina, and my interne, unable to find me, called one of my colleagues, who promptly etherized the patient, and by the introduction of sutures under the bleeding points, close to the uterus, arrested the hemorrhage, and, as I think, saved the patient's life. Two days later urine began to pass voluntarily through the vagina. Further observation, however, showed that a part of it also passed normally and voluntarily through the urethra. This lead to the suspicion that one of the ureters was probably discharging urine directly into the vagina and the other into the bladder. Examination of the vagina by means of Sims's speculum showed at the line of union to the left of the cervix where the laceration had been most extensive an occasional spurt of the urine. The attempt, however, to pass a ureteral bougie from this point failed. Dr. Kolischer, who has great skill in electrocystoscopy, kindly saw the patient with me at this time. He distended the bladder with water and by means of a Casper cystoscope readily passed a bougie into the right ureter. The left ureter, however, was occluded, so that the smallest bougie would only pass about five-eighths of an inch inside the ureteral orifice. The diagnosis was now established of a ureterovaginal fistula of traumatic origin on the left side and of obliteration of that part of the ureter situated below the fistula. It was evident that one of the sutures or ligatures, either at the time of the original operation or at the time of the hemorrhage, had been passed around this ureter and had slowly cut it off or had so transfixed the ureteral wall as to open it. One week after the hemorrhage the sutures were removed. During the following four weeks the nurse reported that the discharge of urine through the vagina was not constant. Urine apparently accumulated in the ureter and pelvis of the kidneys and was discharged at intervals. Upon speculum examination about three weeks after the hemorrhage, the injured part of the vagina being exposed for thirty minutes, no urine was seen to escape. The patient, however, reported that urine had sometimes been retained for three or four hours and had then escaped in considerable quantities through the vagina.

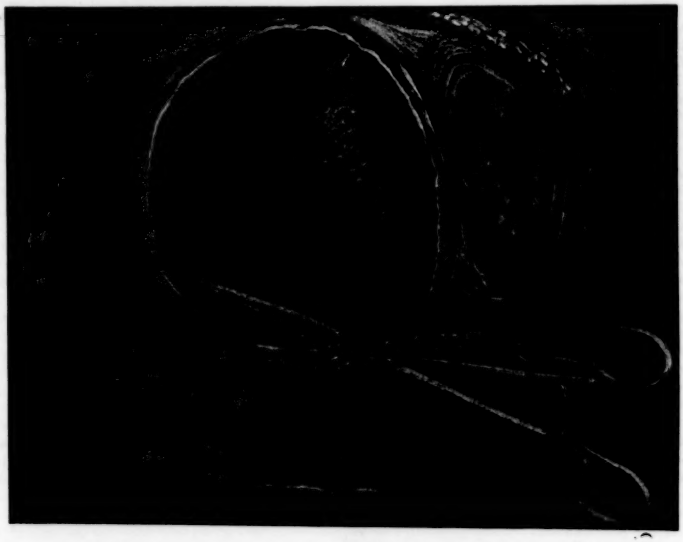
On the 2d of June, thirty-five days after the hemorrhage, with the purpose of performing some operation to re-establish a free communication between the injured ureter and the bladder, I again etherized the patient. For more than three-quarters of an hour with uterine tenacula and a fine probe I sought in vain for the point where the ureter opened into the vagina. No urine came through to mark this point, and even after some rather extensive dissection with the scissors I was unable to locate the fistula, nor was I able to make out the ureter by palpation. Finally, however, a little spurt of urine appeared just to the left of the cervix uteri, but I was unable at this point to pass even a very fine probe. Each attempt only resulted in the making of a false passage — a thing difficult to avoid under such conditions. I then made a colpocystotomy, cutting with the scissors through the vesicovaginal wall in the median line and in the long axis of the vagina just in front of the cervix. The vesicovaginal fistula thus made was an inch long. The upper extremity of it terminated close to the anterior wall of the cervix uteri. With a pair of straight scissors I then extended the incision upward and to the left as nearly as could be estimated to the point whence the urine had escaped. The object was if possible to convert the ureterovaginal fistula into a ureterovesicovaginal fistula; so that the ureter should open, not into the vagina, but into the margin of a vesicovaginal fistula. After another long search I again failed to find the fistulous opening into the ureter, until it was located by another spurt of urine, but the opening was too small to admit even a very fine probe and therefore could not be entered. I then still further enlarged the vesicovaginal fistula in a direction to the left of the uterus, and by good fortune opened into a very much dilated ureter, from which immediately there gushed two or three ounces of pent-up urine. The dilatation explains the fact that I had been unable to locate this ureter by palpation. A bougie passed without obstruction to the kidney thereby proved the absence of any constriction above.

The situation being now much simplified the following procedures were adopted: The bladder mucosa was stitched to the vaginal mucosa all around the artificial vesicovaginal fistula. In this way the exposed surfaces were covered and hemorrhage controlled. A hemostatic forceps, with handles about four inches

[1] Read by invitation before the Boston Obstetrical Society, December 19, 1899.

long and with slender jaws about an inch long, was passed into the vagina and through the fistula. The forcep jaws were then passed, one into the ureter and the other into the bladder, so that the forceps when locked included in their bite, ureteral wall, bladder wall and the connective tissue between. In this way the lower extremity of the cut-off ureter was clamped into close relations with the bladder. The expectation was that the structures within the bite of the forceps would be destroyed by pressure necrosis, and that a wide free ureterovesical opening would be established at a point somewhat distant from the artificial opening into the bladder, and that in this way the case would become one of uncomplicated vesicovaginal fistula. The forceps came off in about three days, and twelve days later the vesicovaginal fistula was closed by suture in the ordinary way. At the time of this operation the new ureteral orifice was found to be perfectly open and very patulous. The subsequent history was uncomplicated, union was complete and in a short time the patient was discharged cured. In a letter written about six months after the final operation the patient reported entire freedom from the pain in the left inguinal region from which she had suffered, and which had made her a semi-invalid for twenty years. I regret that the ureter was not explored before the operation, and that it has not been practicable to obtain measurements of it since.

My experience in the surgical treatment of ureterovaginal fistula is limited to only two other cases, one traumatic and one congenital. In these two cases I operated at St. Luke's Hospital, Chicago, seven or eight years ago. The operative treatment in each was like that just described, except the ureteral and vesical walls were divided by scissors instead of being clamped by pressure forceps. In these cases, however, the ureteral openings were much nearer to the trigone, and the lower extremity of the injured ureter therefore was quite close to the bladder mucosa. In the case just reported the distance and amount of tissue between the bladder and ureter was so great that it could hardly have been divided with the scissors without danger of uncontrollable hemorrhage or of the exposure of broad surfaces to reunite, or to cicatrize and contract, or to suppurate. These difficulties were obviated by clamping the ureter into close contact with the bladder so that when the forceps came off, the exposed surfaces left by the necrosis would, owing to the compression, be of small extent. The compression forceps used in this way, therefore, may make the operation practicable in those regions where the tissue between the ureter and the bladder is too abundant to be safely divided by scissors. Howard Kelly, in his recent book, describes an operation of switching the ureter into the bladder through an artificial vesicovaginal fistula. I have proposed the operation just described in the hope that it will give the greatest security against subsequent stricture at the new ureteral orifice.



Traumatic ureterovaginal fistula as a result of trachelorrhaphy is rare, but as a result of vaginal hysterrhaphy and other vaginal sections is not of infrequent occurrence. The operation above described is applicable to the condition, whatever the cause, whether traumatic or congenital. The alternatives to the operation are well known and need not be described. To open the abdomen, sever the ureter and insert it into the bladder wall is an operation of great difficulty and danger and sometimes of only transient value. The same may be said of dissecting or stripping the bladder from the pelvic wall, finding the

ureter and inserting it into the bladder without invading the peritoneal cavity. The utilization of vaginal mucosa in a plastic operation for the purpose of diverting the urine from the vagina to the bladder usually results in failure of union, or, later, in cicatricial contraction and consequent stricture at the ureteral orifice. Switching the ureter into the intestine or into the opposite ureter are both questionable procedures.

As a corollary to the case just described I now bring before you an observation that, if well founded, may prove to have some practical significance. It is probable in this case that the laceration having extended into the parametria had torn the structures around the ureter. There may also have been injurious pressure of the presenting part of the child against the ureter. Such lacerated tissues would necessarily heal by cicatrization and contraction, and the cicatrix thus formed would draw the bruised ureter towards the uterus, compress it and so give rise to obstruction both from stricture and from kinking. This mechanism will account for the facts of the case. The contracting cicatricial tissue extending from the cervix uteri around the ureter would necessarily draw the ureter into closer proximity to the uterus, where a deep suture applied for closure of the cervix or to control bleeding would be apt to injure it and by compression would cause a narrowing of the lumen of that part lying within its grasp. In this case the stricture extended at least a half-inch on either side of the ureteral fistula. It was evidently this constricted portion of the ureter that was caught by the needle and cut off or penetrated by the suture.

It would be quite impossible, without further observation, to estimate the proportion of cases in which laceration of the cervix uteri causes stricture or kinking of the ureter. In this connection, however, every gynecologist may revert to a class of cases not small, in which there is extensive laceration of the cervix uteri on one or both sides, usually on the left, and in which the localized pain on the corresponding side of the pelvis is not readily accounted for by palpable lesions, such as disease of the uterine appendages or of the appendix vermiformis. The continued pain in such cases dates from the puerperium, is always out of proportion to the palpable pelvic lesions and is not relieved in the slightest degree by the repair of the cervix. As I look back over an experience of more than twenty years I recall many such cases; the one just reported apparently belongs to this class.

But why, one may ask, if the ureter is often drawn by cicatricial contraction close to the uterus, is it not more frequently injured by operations on the cervix? The answer is that if the sutures of trachelorraphy were not usually introduced close to the uterus or very superficially in the vaginal wall more cases of ureterovaginal fistula would probably be reported. This case was very hemorrhagic and therefore required exceptionally deep sutures to control the bleeding. In view of the facts already set forth I desire to submit two questions, as follows:

Question I: In all cases of extensive laceration of the cervix uteri, in which the localized pain is not accounted for by palpable lesions, should we not pass a series of graduated ureteral bougies on the side corresponding to the laceration? This would be for the purpose of measuring the calibre of the ureter and of locating a possible stricture. The principles of examination would be similar to those of measuring the calibre of the male urethra in the diagnosis of stricture.

Question II: In a case of ureteral stricture due to laceration of the cervix uteri, or to any other cause, and situated within the range of a vaginal operation, would not one be warranted in opening the bladder and then proceeding, as in the case reported, to establish a new ureteral orifice? In other words, should not that condition which in this case was the result of an accident be deliberately reproduced in similar cases?

My own answer to these questions would be in the affirmative.

THE RELATIVE HUMIDITY OF OUR HOUSES IN WINTER.

BY ROBERT DE C. WARD, CAMBRIDGE, MASS.,
Instructor in Climatology in Harvard University.

In discussing with my classes in climatology the various ways in which climatic conditions affect man, I have been accustomed to point out that the climate which we have been able to produce inside of our modern houses is an extremely artificial one. We shut out the winds, and live in an atmosphere which is prevailingly calm. We keep out rain, snow, sleet and hail, and thus spend most of our time where there is no precipitation of any sort. In summer we are able to keep the air in our houses cooler than that outside by closing windows and blinds, and by means of artificial ventilation. In winter our houses are heated, and we live in an atmosphere which is many degrees warmer, and very much drier, than that out of doors. This dryness of the air indoors in winter I have been in the habit of comparing with that of deserts, although I have never used any numerical data in making this comparison. In view of the importance of this matter from a physiological point of view, and also because of my desire to present my students with humidity data obtained by actual observation indoors, I have recently made a short series of simple observations along these lines, which may have some interest for the readers of the Journal.

These observations were made in my study by means of one of H. J. Green's ordinary sling psychrometers. The room in question is heated by hot air, from an ordinary hot-air furnace, provided with the usual small — ridiculously small — evaporating pan. Inside the register there is a vessel holding a little more than half a litre of water. This pan has to be filled about once a day, although the rapidity of evaporation depends so directly upon the amount of heat from the furnace that the time needed to evaporate the water varies considerably. Observations were made during three weeks of last November (November 3d–23d), from two to five times daily, as opportunity offered. The hours of observation necessarily varied. Each record included the readings of wet and dry bulb thermometers, and a note as to the condition of the weather outside; the amount of ventilation by means of the windows; the degree of heat coming from the furnace, and the amount of water in the evaporating pan inside the register.

A summary of the mean daily temperatures and relative humidities indoors and outdoors is given in the following table. In the case of the data for the outside air the readings were taken from the sheets of the Richard thermograph and hygrograph at the Har-

vard College Observatory, the hours to which the individual readings correspond being the same as those at which the observations were made indoors. These means for the outside air are therefore not the true means for the day, but they serve for the purposes of the present comparison:

Date.	No. of Observations.	Inside Air.		Outside Air.	
		Mean Temperature.	Mean Relative Humidity.	Mean Temperature.	Mean Relative Humidity.
November 3.	5	69°	28 per cent.	75°	66 per cent.
" 4.	5	71°	30 "	42°	69 "
" 5.	5	71°	30 "	43°	64 "
" 6.	4	69°	29 "	34°	68 "
" 7.	5	68°	32 "	39°	63 "
" 8.	5	71°	31 "	44°	69 "
" 9.	4	69°	32 "	42°	69 "
" 10.	3	67°	34 "	47°	60 "
" 11.	4	69°	33 "	38°	77 "
" 12.	3	64°	30 "	29°	70 "
" 13.	4	67°	24 "	23°	51 "
" 14.	3	67°	26 "	25°	75 "
" 15.	3	71°	31 "	28°	91 "
" 16.	4	72°	29 "	36°	68 "
" 17.	2	68°	27 "	24°	66 "
" 18.	2	64°	31 "	28°	90 "
" 19.	3	71°	40 "	42°	87 "
" 20.	3	70°	28 "	39°	69 "
" 21.	4	69°	25 "	41°	70 "
" 22.	4	71°	30 "	46°	71 "
" 23.	3	72°	26 "	43°	72 "
Means.		69°	30 per cent.	36°	71 per cent.

Summarizing the complete tables, which are omitted here for lack of space, we have the following results:

Maximum relative humidity, 45 per cent.; recorded November 4th, at 8 A. M. It had been raining during the night, the outside air was very damp, with an easterly wind blowing. The window was partly open and there was but little heat coming from the furnace. The relative humidity outdoors was 92 per cent. These conditions, of damp air outside, open window and small furnace fire, were clearly favorable for giving a high degree of relative humidity indoors. The humidity indoors at noon of this same day was also 45 per cent. The weather at that time was beginning to clear, with the wind gradually veering towards northwest. The window was still open.

Minimum relative humidity, 21 per cent.; recorded November 23d, at 10 P. M. Weather clear; northwest wind, moderate; windows shut and good supply of heat from the furnace. The relative humidity outdoors was 68 per cent.

Maximum relative humidity for a whole day, 40 per cent.; recorded November 19th. The day was overcast, damp and rainy, window open throughout the day and moderate heat from furnace. The relative humidity outdoors averaged 87 per cent, which was exceeded on two days only, namely, November 15th, with 91 per cent., and November 18th, with 90 per cent.

Minimum relative humidity for a whole day, 24 per cent.; recorded November 13th. The day was clear and cold, with a moderate to brisk northwest wind. The windows were shut most of the day and the temperature of the room averaged 67 per cent. The relative humidity outside on this day averaged 51 per cent., which was the minimum for any whole day during the period of observation.

The mean relative humidity indoors for the whole period was 30 per cent. Nine days had a relative humidity between 24 per cent. and 29 per cent.; ten had between 30 per cent. and 35 per cent., and two between 36 per cent. and 40 per cent. It will be seen by reference to the table that the mean relative humidity of the outside air during the same period was 71 per cent., or 41 per cent. in excess of that indoors.

The relative humidity in a room is clearly the resultant of several variables, among which are the temperature and humidity outdoors, the amount of heat coming from the furnace, the amount of evaporation from the evaporating pans, the extent to which the room receives the outside air through the open windows, etc. Probably the varying amounts of moisture absorbed and given off by the furnishings of a room also come into play, as suggested by Dr. Henry J. Barnes. It was hoped, as one result of the present study, to be able to determine roughly the relative importance of some of these different factors, especially of the effect of varying amounts of water evaporated from the evaporating pans, but this was found to be impossible, under the conditions of the investigation. It appears, nevertheless, from an examination of the data, that the relation between the relative humidity of the air outside and inside is fairly close, increasing relative humidity outside being closely followed by increasing humidity indoors, and *vice versa*. The weather conditions during which the absolute maximum of 45 per cent. and the daily maximum of 40 per cent. were noted were, as has been seen, precisely such as would have led one to expect high humidity indoors. On the other hand, the northwest wind with its dry, clear weather, which prevailed when the daily mean of 24 per cent. occurred, naturally preceded and accompanied low relative humidity indoors. These same relations appear distinctly on a good many of the days during which the observations were made.

In one case (November 4th) a change of wind from southeast to northwest, accompanied by clearing weather, was closely followed by a decrease in relative humidity of 34 per cent. outdoors and of 6 per cent. indoors. In another case (November 11th) a change of wind to the east, with rain, brought a rise in relative humidity of 15 per cent. outside and of 6 per cent. indoors. On a third occasion (November 12th), when a rainy day was followed by a clearing day with northwest wind, the relative humidity fell steadily from 32 per cent. at 8 A. M., to 30 per cent. at noon and 28 per cent. at 6 P. M., the decreasing humidity keeping pace with the decreasing cloudiness and increasing velocity of the dry northwest wind. The relative humidity outside fell from 78 per cent. at the first observation to 69 per cent. at the second and 63 per cent. at the third. The windows were closed at the time of all the above changes.

Now, the interesting question is: How did the relative humidity indoors compare with that of other places outdoors? It has been seen that the mean relative humidity in Cambridge during the twenty-one days of observation was 71 per cent., this value being based on the readings of the Richard hygrograph at the same hours as those at which the psychrometer observations were made indoors. The mean relative humidity in Boston for the year 1899 was 69 per cent., and for the month of November, 1899, 68.8 per cent., as kindly reported to me by Mr. J. W. Smith, local forecast official of the United States Weather Bureau in Boston. The lowest mean annual relative humidi-

ties in the United States are those for the Weather Bureau stations in the dry southwest. Yuma, Ariz., has a mean annual relative humidity of 42.9 per cent., with a mean monthly minimum of 34.7 per cent. in June. Santa Fé, N. M., has a mean annual of 44.8 per cent., with a mean monthly minimum of 28.7 per cent. in June. Pueblo, Col., has a mean annual of 46.2 per cent., with a mean monthly minimum of 37.6 per cent. in April. Death Valley, Cal., was found to have a mean relative humidity of 23 per cent. during five months (May–September) of the year 1891, when a temporary meteorological station was maintained there by the United States Weather Bureau. During this same period the mean temperature was 94°. In the dry interior of the great Eurasian continent we find the following relative humidities: Southwestern Siberia and Western Turkestan have a mean of 45–50 per cent. in July. Yarkand, in Eastern Turkestan, has a July mean of 47 per cent. In the arid region in the neighborhood of the Sea of Aral, Nukuss (lat. 42.5° N., long. 59.6° E.), has a June mean of 46 per cent., and a 2 P. M. June mean of 19 per cent. Petro-Alexandrowsk, a degree and a half east of Nukuss, in the desert (lat. 41.5° N., long. 61.1° E.), has a mean of 34 per cent. in June. Kasalinsk (lat. 45.8° N., long. 62.1° E.) has a mean of 45 per cent. in July. The air is still drier in the deserts nearer the equator. Ghadames, in Tripoli, has 27 per cent. in July, and 33 per cent. in August, and the Kufra Oasis has 27 per cent. in August, with a 3 P. M. August mean of 17 per cent., and 33 per cent. in September. In the Punjab and Northwestern India, Lahore has 31 per cent. and Agra has 36 per cent. in May.

These examples show clearly enough that the atmosphere of the room in which the observations above referred to were made was, and is, drier than that of many desert regions. That so dry an atmosphere is not healthy, especially in our winter climate, there is no need of an argument to show — certainly not in a medical journal. This low relative humidity means excessive evaporation from skin, lungs and respiratory passages. Furthermore, the strain which is put upon the body in the rapid adjustment which it has to make when we go out from the high temperatures and the desert aridity of our houses in winter into a temperature it may be 70°, 80° or 90° lower, and a relative humidity of 70 per cent. to 100 per cent., is a greater one than we ought to repeat day after day, and many times a day.

The present methods of heating our houses are wretchedly inadequate from the point of view of supplying sufficient moisture. Undoubtedly, the relative humidity of the air coming from an ordinary furnace may be somewhat increased by increasing the size or the number of the evaporating pans in the furnace, or by placing pans of water on or, better still, within the registers. As to the precise amount of increase in the relative humidity as the result of either of these methods, I am not as yet able to give any definite results.

After I had begun the observations whose discussion forms the subject of this paper I received from Dr. Henry J. Barnes, of Boston, a copy of an article by him entitled "The Arid Atmosphere of Our Houses in Winter," published in the *Transactions of the American Public Health Association* for 1898. The relative humidity of Dr. Barnes's office, as determined by observations, with the Mason hygrometer, during seven days in January, 1896, was 27 per cent., while that of the outside air was 73 per cent. This humidity accords closely with that of 30 per cent. found in my study. Dr. Barnes's office was heated by hot-air furnace, with water tank in furnace evaporating from one to two pailfuls daily. In Dr. Barnes's paper mention is also made of the results of humidity observations within other buildings in Boston. These results are here tabulated for purposes of comparison.

Place and Time.	How Heated.	Mean Relative Humidity Indoors.	Mean Relative Humidity Outdoors.
City Hospital, 7 days, December, 1878.	Indirect steam.	29 per cent.	71 per cent.
Office of Dr. Barnes, 7 days, January, 1896.	Hot-air furnace.	27 "	73 "
Office of Dr. Ayer, 10 days, February, 1896.	Indirect steam.	36 "	70 "
Women's Hospital, 8 days, February, 1896.	Indirect steam.	24 "	71 "
City Hospital, 12 days, February and March, 1896.	Indirect steam.	38 "	74 "
Means.		31 per cent.	71 per cent.

The mean relative humidity indoors derived from these five sets of observations was 31 per cent., which is one per cent. higher than the mean obtained by me in my study. The mean relative humidity outdoors was 71 per cent., which corresponds to the outside humidity during my observations. By means of his "humidifier," which is placed over the register of a hot-air furnace in his office, Dr. Barnes has been able to obtain a mean relative humidity of 53 per cent. This humidifier evaporates on the average 4½ quarts of water daily, and Dr. Barnes has found that with this higher relative humidity his office is comfortable at a temperature of about 65°, whereas, without the artificial supply of moisture, a temperature of 70° to 71° was necessary to make the room comfortable. I am indebted to Dr. Barnes for a reprint of his interesting paper, as well as for references to other writers on this same subject.

PSYCHOLOGY AND HEREDITY.[1]

BY ROBERT MACDOUGALL, PH.D., CAMBRIDGE, MASS.,
Instructor in Psychology, Harvard University.

(Concluded from No. 8, p. 189.)

MANKIND is beset as well in mature life as in the years of childhood by a host of fears, of which the majority have no ground or explanation in the nature of external circumstances. The fear of strangers — needless in our day of regulated society — the fear of beasts, eliminated as a practical factor by the destruction of wild animals; the fear of the dark, deeper than the tales of ill-advised nursemaids or pranks of foolish playfellows, and often ineradicable even in mature life, and the fear of open spaces, both of which point to a sometime existence when the shades were full of terror and the menace of the plain was to be avoided only by skulking in the thicket, — these, together with the thick cloud of still more monstrous fears with which the alienist must deal, the automa-

[1] Read at the meeting of the Boston Society for Medical Improvement, December 4, 1899.

tisms of childhood and youth, habits of stepping on particular flags of the pavement and avoiding cracks, counting and dividing manias, are forms of activity which stand apart from the purposeful stream of our conscious life and find no explanation in the facts of its present environment, but which become intelligible and significant in the light of a theory which views them as residual functions of the soul, which exist now because at one period they were active and fully developed responses to an environment which has since passed away.[14] These pathological feelings and abnormal forms of activity are doubtless of the instinct type, and their appearance is probably due to a process of ripening in the brain in virtue of which it becomes super-irritable to particular kinds of stimulation at successive periods in its development. The fact of conscious experience is thus made the correlate of a specific process of change in the nervous substance.

But the courses run by the physical and mental evolution of the human individual are not wholly parallel and synchronous, and I wish to point out several important aspects of this discrepancy.[15] In the first place, there is a difference in the amount of directive control which can be exercised over the distribution of nourishment during the formative periods of two life processes. The type of the physical individual is practically fixed by the close of the embryonic development. During the plastic antenatal period the changes which the organism undergoes are great and sweeping. The general conformation of body structure and its system of functions pass in successive stages through type after type of the taxonomic series,[16] and concomitantly with these changes the distribution of nutriment to the transient structures varies according as they are nascent or atrophent. But this distribution of nourishment in unequal ratios to the permanent and transient tissues is neither under human control nor determined by a changing environment, but is due to a pre-existing hereditary disposition to a particular direction of development. It is impossible to control the supply of nutriment to particular parts of the growing organism on account of the intermediation of a transforming and administering agent in the mother's body, and were this obstacle removed there would remain the more fundamental one that the same chemical elements and compounds are distributed throughout the whole extent of the organism, and that therefore the withrawal of any element or group of elements from the food supplied would be represented by a reduction of the total vitality or a disturbance of the general functioning instead of being confined to specific organs or tissues, for the effective agent of distribution lies in the hereditary constitution of the organism itself.

In the psychic individual, on the contrary, the process of growth, instead of being protected from disturbances of a pre-established equilibrium, is dependent upon the irregular stimulation of a changing environment, which is to a great extent directly controllable by human agencies. The life of consciousness begins with the independent physical existence of the individual. Whatever be the earlier strivings of sentience in the embryo, the change of conditions at birth is so tremendous, the new environment so significant for all subsequent activity, that we rightly call this the birth of the soul. Structurally and functionally the whole complex system of psychological activities up to this point was an existence *in potentia*, consisting of an aptitude or tendency to perceive and react in a specific way under any given conditions, and the realization of these implicit capacities stands in an intimate relation to the world in which the organism is placed. For we must recognize two essential factors in the development of the concrete consciousness, namely, an internal impulse to react and an external something upon which reaction shall take place. Fit nourishment in the shape of a suitable environment must be provided if any given form of activity is to become part of the individual life, for the inner factor is not a full-blossomed habit or function, but only a propensity to act in a specific way when the right conditions for its discharge are found. To transform the instinctive tendency into an established function, it is absolutely necessary that the complete reaction demanded by the impulse just struggling into life should be successfully carried through. Feed the instinct, it thrives; starve it, it dies. This is illustrated in the changed habits of birds and beasts kept in captivity.[17]

The psychic individual therefore stands in a decidedly different relation to the changing conditions of life from that which the physical organism presents. His development may be quickened, directed or retarded by manipulation of surrounding conditions. For as a matter of fact this environment is neither a stable one nor one in which the changes are presented fortuitously or independent of human control. The relation of nourishment to specific structural and functional development is known, and the supply can be, and customarily is, unequally distributed for the purpose of fostering or repressing the various propensities which manifest themselves. We have therefore to acknowledge the reality of a world of design within the psychological life and the direction of its process of change in subservience to ideal ends. This agency, however, produces nothing; its function is purely selective, controlling the process only by supplying material for the desirable impulse to react upon, and witholding it from the undesirable. "There is a happy moment," says James, "for fixing skill in drawing, for making boys collectors in natural history, and presently dissectors and botanists; then for initiating them into the harmonies of mechanics and the wonders of physical and chemical law. . . . If a boy grows up alone at the age of games and sports, and learns neither to play ball, nor row, nor sail, nor ride, nor skate, nor fish, nor shoot, probably he will be sedentary to the end of his days; and, though the best of opportunities be afforded him for learning these things later, it is a hundred to one that he will pass them by and shrink back from the effort of taking those necessary first steps the prospect of which, at an earlier age, would have filled him with delight."[18] This directive and inhibitive control of the environment reaches its chiefest significance in the ethical life, for the fundamental fact of moral training lies in the reinforcement of the good impulse by affording it every possible occasion for functioning upon the fullest and richest material,

[14] Stanley Hall: A Study of Fears, American Journal of Psychology, viii (2), pp. 147-249, 1897.

[15] For an ingenious presentation of the theory of heredity from its psychical side, see Henry B. Orr: A Theory of Development and Heredity. New York. 1893.

[16] Landois: Human Physiology, p. 948.

[17] James: Principles of Psychology, vol. ii, 398, ff. See also chapter on Habit, vol. i, 122-7.

[18] Loc. cit., vol. ii, p. 401.

and the elimination or repression of the evil by a literal process of starvation.[19]

But, further, there is a positive side to this process in which also it differs from that of organic evolution. The physical individual is given practically complete at birth; there are no further organs to be added, few new structures to develop later. The withdrawal of nourishment from any one part is then a reduction in the total sum of elements making up the individual. If a limb be found so that circulation ceases, growth is arrested, the member atrophies, and the body is mutilated; it is just so much withdrawn from a limited sum.

Both physically and mentally men are bundles of life, all roughly of the same size; they have the same assimilative and reproductive functions, have like perceptive apparatus, and make similar reactions; each can realize only a certain number of activities, possess a certain limited store of knowledge, and set of interests knit up in his life. But these do not represent all the inherited tendencies which his nature contains. The individual is potentially, that is, as a transmitting agent in the chain of life development, immensely more than he can actually become. This has been expressed by the term pre-potency. Eyes, hair, features, color sensitiveness and color blindness, traits and gifts of mind characteristic of the grandparent may appear in the grandchildren after skipping over the intervening generation. Here we must suppose the trait to have existed in that link in some form as a transmissible and developable tendency. It may be that we should say the individual represents all the possibilities of all his ancestors. Though only one color of eyes, which we may call the dominant tendency in that individual, can be physically realized, yet all are there — blueness, grayness and blackness — as transmissible tendencies, which may find a theatre of realization in some future generation. When the characteristic has been submerged a sufficient length of time, its reappearance will be amidst modified forms and new habits, as is illustrated in the occurrence of atavistic traits and reversions to more primitive forms of body structure, of feelings, of instincts, and the like, which are presented in the course of certain diseases, and by the patients in our hospitals for the insane.[20]

Now, this pre-potency, which, with the exceptions just mentioned, has already ceased at birth to be a real, physical pre-potency, continues to be a living factor in the psychic development, and presents a field where the process of structuring can be directly modified and controlled. The fact should lead to a broad hopefulness in our educational activities and impress upon us the need of providing means and opportunity for the development of the child in all desirable directions whether these represent the actual endowment of the parent or not. Our conception of the possibilities of education are vastly different if we regard the child as the reproduction of his parents, limited in his aptitudes strictly to those which their lives have presented, or conceive him to be the exponent of a stock of which both parents and offspring, as concrete individuals, are but incidental offshoots, drawing their characteristics alike from the common well of inheritance, of whose contents each life can bring to the surface but a few meagre drops.

The psychical individual, therefore, is in a much more intimate fashion the outcome of his environment than is the physical. And to this must be added the presence of a wholly new and immensely insignificant factor in so far as concerns the kind of thing which the individual consciousness is to become as over against the kind of stock to which it may belong. This is the reality of the inheritance of acquired characteristics in the world of consciousness. The fact of cumulative heredity through the transmission of the results of use and disuse needs but to be indicated. The sum of the father's acquisition is transferred to the child not by any devious or obscure process, laying the whole matter open to doubt, but by direct and immediate communication. Our knowledge is neither inherited nor acquired; it is socially transmitted, and we who stand in the foremost files of time are indeed heirs of all the ages. But the path of transmission has completely changed, a new form of heredity here makes its appearance; for the acquired characters instead of being stored in the organism are laid up in the environment and transmitted through it. In song and story, in oral tradition and printed book, in pictures scratched and woven and painted, in temple and tomb, in implements and clothing, in weapons of war and instruments of precision, in systems of science and philosophy and religion, are treasured up the results of the struggles and conquests of our forefathers over their physical and spiritual environment, and we are inheritors of their wisdom profiting by every item of their winnings. The process of evolution in the individual organism is directly conditioned by the nature of the world in which it exists. Adaptation cannot outrun the environment. The organism may present as many variations as you please fitted to survive under conditions which in the plan of the universe are to be realized next century or next æon, but it is none the less unfit for the present and is as subject to elimination as is one fitted to conditions gone by a thousand ages or utterly non-existent. The environment sets the pace, and the process of organic adjustment always lags a step behind the process of change therein. Now in the psychological individual this pace is tremendously increased. For here man creates his own environment, which consists, through all its significant sweep, of the stored-up results of past activities. Under this increased pressure, therefore, we should expect a great acceleration in the process of adaptive change. In one regard at least this expectation is justified. In the individual life produced under these new conditions, the type manifests an amazingly successful adaptation. It is only occasionally that the force of this fact pushes in upon us and we realize how greatly in the conscious life the process of evolution is foreshortened. The things we see and handle and do, our pleasures and our pains, the practical activities of our life and its intellectual interests, the procession of events in the world, yet about us and of images in our own consciousness, are inconceivably different from those of the primitive man. We have done away with his whole intellectual heavens and earth, and though the physical laws under which he existed still endure, as well as all the grander features and processes of the world, yet in their psychological values as objects of reaction, as motives for the will, the transformation has been no less great than in the

[19] R Schäfer: Die Vererbung: Ein Capitel aus einer zukunftigen psychologischen Einleitung in die Pädagogik. Berlin, 1886.

[20] Chief among facts of latent heredity are those of secondary sexual characteristics. See Darwin: Variation of Animals and Plants under Domestication, vol. ii (second edition), 1892; and Galton: Natural Inheritance, p. 134.

realm of imagination and belief. And this holds true not of a few favored individuals alone, but of the race as a whole whenever these new conditions are imposed upon it. You will note that the genius does not represent this crest in the wave of development; he is a sport, a variation not accounted for by any environment definable by us.

But the further question remains as to the security of this advance, the stability of the latest type developed. Transformation of the individual may not affect the stock itself. The high degree of specialization presented may be wholly dependent upon this exceedingly artificial environment, that is, an environment which is composed not of elements resulting from a natural process of objective change, but consisting of the products of transformation within the individual organism itself — a subjectively objective environment. The wild flavor may still be there, though continually suppressed in the individual by the presence of these secondary selective conditions, and may be ready the moment these conditions are broken down to assert itself in a reversion to more primitive, savage forms.

I think this statement of the case is true. The variety which we call the scholar, the man of culture, the scientist, is a highly unstable type insecurely maintained upon a foundation of more primitive attitudes which represents the fundamentally real type still. In so far as the conditions which determine the nature of the present concrete individual life consist in these accumulated results of acquired characteristics stored in the environment and transmitted by social heredity, they are transient and directly ineffective for racial variation. They form only a scaffolding about the life. I do not believe that the effects of intellectual training, or artistic culture, or acquired manual dexterity, or business sagacity, in so far as they are training effects and not spontaneous variations, are reproduced in the form of permanent variations of type.

But indirectly this artificial structure does affect the racial adaptation in that it is a pre-potent agent of selection over and above those which the untransformed environment presents, and therefore fosters the preservation of those variations which lie in the direction of its own change. In so far as those sports arise which we call the saint, the genius, the man of feeling, this environment tends to preserve them, but by a purely selective, not a productive, activity. Here, indeed, lies the great significance of the Weissmannian-Spencerian debate. Our interest in it is at heart a psychological one and no other. Not only does the moral aspect of the problem touch us more closely than the physical, but the facts in the latter case are much less ambiguous than in the former, for the physically bad stock tends toward elimination, the physically good toward survival. But such an easy optimism is by no means possible on the spiritual side. The morally bad stock shows no less fecundity than the good. The idle, the shiftless, the dull, as perhaps also the criminal, propagate more rapidly than the rest of the race, rather than less so, if for no other reason than that the restraints upon marriage are much less rigidly observed by them than by the more highly selected members of society. The moral problem is absolutely different according as we hold to one or the other of these two views. For the Spencerian training is of more than individual value; the effects of use and disuse are inherited, and the cumulative results of right thinking and right living in the end convert bad stock into good stock. Restraint, discipline, the conformance to a higher life, are fundamentally hopeful, since the process of moral training tends to supersede itself by effecting an adaptation of the race as a whole. Under the Weissmannian concept there is no hope and no end to the process; its labors are Sisyphean, for the effects of training are transient and individual. The bad stock is no more got rid of by discipline and culture than are the impurities of a river by filtration of the water on the part of those living below the source of pollution. We are presented with a complete realization of the Calvinistic doctrine of predestination to good and evil. The units of good and evil under the former concept are individual impulses within the single human consciousness; moral progress is the selection and preservation of the right and good aptitude and the elimination of the evil; the selective agent is the individual human personality; and the result is a purgation and transformation of human society through the moral culture of that personality itself. Under the latter concept these individual human consciousnesses themselves are the units of good and evil among which selection is to be made; moral training is indeed still endlessly valuable so far as the single human subject of it is concerned, but racial progress can be made only by preservation or destruction of the good and evil souls themselves; and the agent of selection is no longer conceivably the individual — the function of control and direction must lie in the hands of that human society which is itself in process of transformation. If this be the true nature of the process,—

"So careful of the type it seems,
So careless of the single life,"—

I leave it to you to consider what readjustment of attitude must be made, what reconstruction of one's whole conception of responsibility and duty toward oneself and the world at large.

Clinical Department.

PERINEPHRITIC ABSCESS INVOLVING THE APPENDIX.

BY HUGH WILLIAMS, M.D., BOSTON,
Formerly House Surgeon, Massachusetts General Hospital.

THE patient, a young man of twenty-four, was brought to the Massachusetts General Hospital, May 1, 1899, during the service of Dr. M. H. Richardson, and was operated upon by Dr. J. G. Mumford. The man was sent in with the diagnosis of appendicitis by his attending physician.

The patient's previous history was good, and he stated that he had always enjoyed good health up to the time of his present illness. He was a well-developed and well-nourished man, and gave the following history: About ten days previous to his entrance to the hospital, he had been taken with pain in the abdomen and back — not localized, and coming on suddenly. The next day he had headache, felt weak and nauseated, and vomited soon after, and since then, up to the time of his entrance, he had been unable to retain anything on his stomach. The pain, which had continued from the first, had been getting more severe,

and was now localized, extending from the umbilicus to the right loin and into the back. The bowels had been constipated. His physician stated that there was high fever during the first few days of the illness, but that since then it had gradually fallen to normal, and had remained so since. The urine was said to have been high colored and diminished in amount, but no chemical examination had been made of it previous to his entrance.

The general condition of the patient was fair, with a temperature of 98.6°, pulse 84, and respiration 18. The abdomen was generally but only slightly distended. There was marked rigidity of the abdominal muscles on the right side. A large mass could be palpated in the right loin, but its limits could not be followed out on account of the extreme tenderness. The dulness on percussion was continuous with the liver dulness above, and extended below to the anterior superior iliac spine. There was dulness in the flank, extending forward to just external to the border of the right rectus muscle. Rectal examination was negative. The blood count showed 14,000 white corpuscles. There was no evidence of edema anywhere, and the examination of the heart and lungs was negative. The diagnosis of appendix abscess was made.

The patient was prepared for immediate operation, and under ether a mass could be readily palpated, extending from the costal margin to below the anterior superior iliac spine. An incision about four inches long was made along the border of the right rectus muscle, the general peritoneal cavity opened, and the intestines walled off with gauze from the mass, which was then opened, evacuating several ounces of foul-smelling pus. Three small pieces of tissue were then removed from the abscess cavity, each piece about the size of the terminal phalanx of the little finger, which on section, macroscopically, looked like renal tissue, but whether they came from the kidney proper in a condition of extreme lobulation or were supernumerary kidneys was not determined. No part of the appendix was found. The abscess cavity was then washed out, and gauze wicks inserted. The patient was in very poor condition at the end of the operation, but reacted well to stimulation.

On the third day after operation, the discharge from the wound had a strong urinous odor. On the ninth day a fecal fistula was found in one of the loops of bowel presenting in the wound, and besides this fecal discharge there was a discharge of a thin fluid, having a distinct odor of urine from the upper part of the wound. A few days after this the patient began having pain in the rectum, and at times severe rectal tenesmus, and at the same time his temperature shot up. Rectal examination showed a large fluctuating and tender mass on the right side of the pelvis. This was aspirated on the sixteenth day after operation and a considerable amount of pus evacuated, giving immediate relief, the temperature falling to normal the following day. There was no longer any urinous discharge from the wound at this time, but the fecal fistula had increased in size. The wound was otherwise clean and healthy looking and granulating up rapidly. The twenty-four-hour amount of urine, which had been steadily increasing, was now normal. The general condition of the patient had meanwhile rapidly improved, and a firm cicatrix having formed about the fecal fistula, he was again operated upon for its closure by Dr. S. J. Mixter on the 22d of June.

In this operation, a stump of the appendix, about one inch long, was found lying to the right of the cecum. It was surrounded by a mass of firm adhesions, showing that it must have been either involved in the previous abscess, or that it was its primary cause. The right kidney was carefully examined and found to be apparently normal in every respect, and not lobulated, showing that in all probability the kidney tissue removed at the first operation was of supernumerary origin. The adhesions having been freed, and the opening in the bowel closed, a small gauze wick was inserted, and the abdominal wound closed. The patient made an uninterrupted recovery, the wound having entirely closed three weeks after operation.

The microscopical examination of the pieces of tissue removed at the first operation showed them to be renal tissue, part of which showed replacement with granulation tissue, as if forming the wall of an abscess cavity. The pathological diagnosis was, "a destructive suppurative inflammation of the kidney of rather long standing."

Repeated examinations of the urine showed it in every case to have been normal. This seemed to be another reason for considering the kidney tissue removed of supernumerary origin, and the right kidney itself to be normal. Whether the abscess was primarily due to inflammation about the kidney or about the appendix could only be settled by the pathological report, which stated that the inflammation about the kidney was of rather long standing. If we take this view, we can then consider the appendix to have become secondarily involved, and that at the time of its involvement the acute symptoms began.

Medical Progress.

REPORT ON ORTHOPEDIC SURGERY.

BY E. H. BRADFORD, M.D., AND E. G. BRACKETT, M.D., BOSTON.

CONGENITAL FLEXION OF THE KNEE.

M. Phocas[1] reports six cases of this rare condition, one with an account of the dissected leg, and reviews the previously recorded cases. The cause of this condition, in which extension at the knee beyond a right angle is impossible, is obscure. It occurs usually in the children of primiparæ. Other deformities may also be present, as flexion or adduction of the thigh, knock knee, and very commonly club foot. The so-called "scars" often attributed to amniotic adhesions are common. Anatomically there is a sharp anterior bowing of the femur near the epiphyseal line, and obliquity of the upper surface of the tibia, sometimes a displacement outwards or an absence of the patella, and possibly a deformed head of the fibula. In addition to these bony changes all the soft parts on the back of the leg are contracted, ligaments, muscles, fasciæ, and skin. Treatment should be directed to a gradual stretching and correction by manipulation and appropriate apparatus or by immediate osteotomy and tenotomy.

ACQUIRED DEFORMITIES OF THE TOES.

M. Kirmisson[2] suggests that, in addition to im-

[1] Revue d'Orthopédie, January, 1899, p. 14.
[2] Loc. cit., March, 1899, p. 133.

proper shoes, there are many causes for hallux valgus and allied deformities of the toes. He mentions particularly rheumatism, alcoholism, various diseases of the nervous system, defects of ossification, and a congenital predisposition in certain cases.

SUDDEN DISLOCATION SECONDARY TO ACUTE DISEASE.[3]

Of 81 cases of this rare complication 32 followed typhoid, 24 followed acute articular rheumatism, 13 followed scarlet fever, and the remainder variola, gonorrhea, grippe, erysipelas, and "eruptive fever." He reviews different theories which have been presented to explain the pathological conditions and occurrence of this form of dislocation, and particularly that of the hydarthrosis of the joint by Petit, and that of the muscular action by Verneuil, and considers these at length, particularly in regard to the fallacies of the theories and more especially in regard to that of Petit, that of the hydarthrosis, which has received the most support, and is regarded by the modern writers, among whom are Keene, as the probable one; and third, the theory of the combined forms of the hydarthrosis and muscular action. The hip-joint is almost invariably the one involved, although in rare cases the knee, shoulder, or other joints may be affected. It occurs usually in young patients of either sex during convalescence, and is characterized by the absence or slight extent of any bony or cartilaginous changes. When associated with such changes tuberculosis must be considered. The accident is probably due to a combination of causes, chief among them being the long continuance of faulty positions, the weakening and stretching of certain muscles and ligaments, the distention of the capsule by effusion. In this condition any slight reflex muscular spasm may cause a dislocation. The accident usually produces no symptoms other than the characteristic deformity, although it may cause great pain, or, again, relieve pre-existing pain. Epiphyseal separation is to be excluded. Reduction under anesthesia is usually easy, especially if done promptly. Kirmisson recommends the following maneuvres: First, complete flexion with persistent adduction, to be followed by circumduction; then with the leg abducted, semiflexed and rotated outward, the head will slip quietly into place. If manipulation fails continued extension and, if necessary, tenotomy should be tried. After reduction the leg should be held in the abducted position with extension, if necessary. Excision or osteotomy may be necessary in immediate cases.

SUDDEN DISLOCATION IN HIP DISEASE.[4]

These rare accidents, comparable in some respects to dislocation after acute diseases, occur usually early in the course of the disease, before extensive destruction of the joint surfaces has occurred, and usually without suppuration. They are very different from the slowly progressive luxation due to erosion of the femoral head and acetabulum as the result of prolonged disease. Owing to the slight joint changes reduction under an anesthetic is usually possible and permanent.

ERRORS IN SKIAGRAPHS.

Hoffmeister[5] calls attention to the difficulty of determining the meaning of the Röntgen ray pictures, and considers that it is necessary in order to get a correct opinion of an x-ray picture to have correct data in order to know what the proper projections of the portion of the body were. This is particularly true of skiagrams of the pelvis, and it is necessary in these to have the position of the lamp, the body, and the plate accurately given.

CONGENITAL SCOLIOSIS.[6]

The author quotes the statement of Coville that one case of scoliosis was to be found in 1,015 newborn children. He himself mentions two cases, one after a forceps delivery and where death followed pneumonia. The pathological specimen showed a left convex dorsolumbar curve, with a right cercivodorsal convex curve, with marked rotation and without any change in the vertebræ. The curve he considers to be the result of compression *in utero*.

SCIATIC SCOLIOSIS.

Denuce[7] reviews the various opinions which have been advanced in regard to the causation and development of this deformity following painful affection of the sciatic nerve, and states the ground for his own belief that this condition first seen does not exist. The distinction made is more or less of a technical one, but is of value in that it is a careful check on the sometimes hasty grouping of cases on superficial resemblance. He lays stress on the recognition of the necessary condition in true scoliosis, in the existence of the deviation of the spinal column, and greater or less permanency of the deformity. In many of the cases so classed, he thinks that there existed previously a scoliosis, exaggerated temporarily by the distorted position, and many of the others being cases of sacro-iliac disease, the common symptoms of which is considered in the article in detail. It concludes that, (1) sciatic scoliosis does not exist; (2) that sciatica, like any painful affection of the leg, tends to the assumption of a malposition of the trunk in leaning toward the affected side and a corresponding depression of the pelvis, and results from the effort to maintain the equilibrium, but this position is not permanent, may be reversed, and does not constitute true scoliosis; (3) the existence of a more or less fixed lumbar spine, and lateral inclination of the trunk, with a sciatica, should lead one to suspect the primary condition to be a sacro-iliac disease.

CONGENITAL SPASTIC PARALYSIS.

Hoffa[8] considers that the origin of this affection is an intrameningeal or an intracerebral hemorrhage, most frequently caused by a difficult birth, and causing an injury to the neurons of the motor tract. This lesion is manifested not in a complete interruption, but in an injury of the function. As a rule, the extensors and abductors are weaker than the flexors and adductors. Treatment consists in increasing the energy of the cortical motor neurons, and diminishing the activity of the peripheral neurons. The first must be developed by massage, gymnastics and resistant movements. Tenotomy and tenectomy are indicated in the stiff muscles, followed by fixation.

[3] Dagex: Revue d'Orthopédie, January, 1899, p. 44.
[4] Kirmisson: Revue d'Orthopédie, January, 1899, p. 26.
[5] Hoffmeister: Beiträge zür klinischen Chirurgie, Band xxi, H. 3.
[6] Hirschberger: Zeitschrift für orthopedische Chirurgie, Band vii, p. 129.
[7] Revue d'Orthopédie, September, 1899.
[8] Munich Medical Volk, 1898.

THE PATHOLOGY OF CEREBRAL PARALYSIS IN CHILDREN.

Schultess[9] had the opportunity to observe two children who presented this condition at an early age, one being fourteen days old, and the other three weeks. In these instances the characteristics seen in older children were well marked, pointing to a congenital origin of all cases of this class. In a few older cases a lengthening of the ligamentum patellæ was observed, a result of the exaggerated flexed position, in the opinion of the writer. The treatment recommended is that of tenotomy of the tendo Achillis, with forcible correction and flexion in a plaster bandage, with massage later, and the use of apparatus where it is necessary.

CEREBRAL PARALYSIS OF CHILDREN.

Bocker[10] classifies cervical paralysis as follows: (1) That affecting the lower extremities only, true Little's disease; (2) those affecting the upper extremities also, with cervical disturbance as well; (3) cases where there is athetosis present as a prominent symptom; and (4) where there is cerebral hemorrhage. The prognosis he considers bad in the second class. Cases of the first class are most favorable from an orthopedic point of view. Massage of both the weak and the spastic muscles may accomplish a good deal, but tenotomy or tenectomy is of more benefit, followed by massage, exercise and apparatus. Athetosis is to be handled by massage and gymnastics twice a day, carried on for six months. In cerebral hemiplegia the treatment is much the same as far as the legs are concerned. For the arm, a transplantation of tendons is of service. Transplantation of tendons is also of use in some foot cases, bending of the bone due to inflammatory softening.

THE SURGICAL TREATMENT OF CONGENITAL SPASTIC PARALYSIS.

Lorenz[11] recommends for treatment tenotomy or tenectomy in the severer cases, followed by fixation in an over-corrected position. In the severe cases of spasm of the adductors he has resected the obturator nerves. The after-treatment he considers of the utmost importance. This consists of massage, gymnastics and faradization. Treatment by orthopedic apparatus is not found of assistance.

OPERATIVE TREATMENT OF RADIAL PARALYSIS AND TENDON TRANSPLORATION IN SPASTIC PARALYSIS.

Franke[12] describes a number of operations on the upper extremity. The tendon of the extensor carpi radialis longus was shortened, and with the end forcibly thrown back, the central end of the divided tendon of an active flexor carpi ulnaris was sewn into the tendon of the extensor communis digitorum. The result of the operation was very good. Arthrodesis of the shoulder-joint was done in one instance to prevent the inward rotation of the arm. The author is of the opinion that there is no incurable radial paralysis. In spastic paralysis the author combines tendon transplantation, tendon lengthening, and tendon shortening.

[9] Zeitschrift für orthopedische Chirurgie, Band vi, H. 1, p. 1.
[10] Loc cit., Band vii, p. 102.
[11] Wiener klinische Rundschau, 1897.
[12] Archiv für klin. Chirugie, Band lvii, H. 4.

TENDON TRANSFERENCE.[13]

The author advises this procedure not only in cases of infantile paralysis, but also in cases of cerebral paralysis. An examination before operation should be made by voluntary innervation of the muscles, and by electric testing. Where some doubt remains it is better to make the incisions long enough to see the lower ends of the muscles, and in that way determine on their quality. It is best not to transplant the active muscle or its tendon, but to transplant the peripheral end of the paralyzed muscle on to the sound one, or split the tendon of the sound muscle and attach to the useless tendon. It is found necessary to lengthen tendons as well as to transplant. The question of the re-establishment of co-ordination seems not to be settled as yet. Practically, however, good results are obtained even from transplanting antagonist muscles. The following transferences are reported:

(1) The outer half of the tendo Achillis to the tibialis anticus in a traumatic case, without great gain.

(2) The flexor carpi ulnaris to a paralyzed extensor communis digitorum in cervical paralysis, with a shortening of the extensor carpi radialis. A second operation was performed, transplanting a paralyzed triceps into the deltoid, with a good result from both transplantations.

(3) A tenotomy of the adductors and hamstrings and later a transplantation of a half of the tendo Achillis to the paralytic extensor communis, with an excellent result.

(4) Ischioparalysis following attempt at violent reduction in double congenital hip with a perineal paralysis remaining, and a transplantation of the outer half of the tendo Achillis to the tibialis anticus; a good result.

(5) A paralysis equinovarus with a transfer of half of the tendo Achillis to the tibialis anticus; a good result.

(6) In cervical paralysis, shortening of the extensor carpi radialis, with good result.

(7) Infantile paralysis with dropping of the toes; transference of half of the tendo Achillis to the tibialis anticus; improvement of gait followed and voluntary dorsal flexion possible, but the foot was drawn out.

(8) Infantile equinus. The transference of the tendon of the tibialis anticus to the extensor communis digitorum; almost perfect result.

(9) Transference of the tendon of the rectus femoris, which was cut across and the peripheral portion was transplanted on the sartorius; little benefit resulting.

(10) Cervical paralysis of the musculospiral group; the extensor carpi radialis was shortened, with an excellent result.

(11) Infantile equinovarus with paralysis and contraction. The tendo Achillis was split and lengthened; the tendon of the extensor digitorum was exposed and the peripheral end cut, and the cut peroneus longus and tibialis were fastened to it. The deformity was corrected, but no active dorsal flexion followed.

(12) Paralysis equinovarus; shortening of the tibi-

[13] Goeht: Zeitschrift für orthopedische Chirurgie, Band vii, H. 1, p. 54.

alis anticus; the tendo Achillis split and fastened to the peroneus longus; good improvement followed.

(13) Flexion of the knee in an equinovarus from infantile paralysis. The tendo Achillis was split and a half of it sewn to the extensor communis digitorum brevis, with a good result.

(14) Infantile paralysis with contraction on the right and left side. On the right side the peripheral end of the peroneus longus was fastened to the tendo Achillis, and the same was done with the peroneus brevis; the tibialis anticus was shortened; on the left side only the tibialis anticus was shortened. The result was good position for both feet and active movements.

(15) Paralysis following fracture of the elbow. The extensor carpi radialis was shortened. The flexor carpi ulnaris was freed and fastened to the extensor communis digitorum. The result was a remarkably good one.

(16) An infantile flat foot. The tibialis posticus was shortened and a half of the tendo Achillis fastened to the tibialis anticus. The result was useful, but there was a tendency to over-correction.

(17) Paralytic valgus. The peroneus longus was cut and carried beneath the tendo Achillis and fastened to the tendon of the paralytic tibialis posticus. The result was fairly good.

(18) Infantile paralysis with the equinovarus. Half of the tendo Achillis was fastened to the paralyzed peroneus and the tibialis anticus was shortened. Good position followed, but no active movement.

(19) Paralysis of all the calf muscles and part of the quadriceps with an equinus position. Tibialis anticus was shortened and the position was improved.

A thorough asepsis is important as well as a correction before the operation. A definite plan is to be laid out on the basis of an examination of the limb, and either a transference of the active muscle to the tendon of the paralyzed muscle or *vice versa* is to be done according to the case. The contracted tendon is either to be cut or plastic lengthening done. The limb is to be fixed in a plaster-of-Paris bandage after the operation and allowed to get up in from one to two weeks. Plaster is to be worn four to eight weeks in all, and an apparatus is used afterwards, or a rubber band fastened by adhesive plaster to the upper part and to the shoe at the lower. Massage, electricity, and active movements are important; pure passive motion is of less value and can usually be omitted.

TRIGGER FINGER IN THE GERMAN ARMY.

Schulte[14] describes nine cases, five observed by him. In four cases an enlargement of the size of a pea could be felt in the affected hand; in one, a roughness easily noticed. This unevenness was to be observed in the portion of the hand between the line of the fingers and the middle of the hand, and was most noticeable at the point of check motion, disappearing in the middle point of the hand when the obstruction was overcome. The check was always seen in the direction of extension of the fingers and not the reverse. Schulte made a number of experiments on the cadaver, sewing pieces of sponge on the surface of the flexor tendons. This produced a difficulty in motion, but did not give the characteristic jerk. When, however, a thread of silk of medium thickness was knotted, the characteristic jerk and snap were observed. After careful dissection Schulte could determine that the check to the entrance of the knot was as the tendon played into the strong ligamentous arch, forming the sheath of the tendon. When this was cut the motion was easy.

[14] Deutsche militärärztliche Zeitschrift, 1897.

CONTRACTION OF THE HIP-JOINT AND ANCHYLOSIS.

Blencke[15] pays special attention to the correction of the shortening by an oblique subtrochanteric osteotomy, correcting the shortening by a practical lengthening of from five to 11 centimetres. He mentions a case of Landerer where a practical shortening of 16 centimetres was reduced to two and one-half centimetres. He mentions that slight amount of motion may be obtained after excision and after pelvi-trochanteric osteotomy of Lorenz, by interposing a muscular layer between the cut bone.

OBLIQUE TROCHANTERIC OSTEOTOMY.

Berger[16] recommends for correction of the deformity following hip disease an oblique osteotomy. Phocas[17] prefers the linear osteotomy. Nelaton also employs an oblique osteotomy, though he recommends that this procedure should not be undertaken until three months after an attempt to loosen the head of the femur by force.

AMBULATORY APPARATUS FOR HIP DISEASE.

Wieting[18] recommends suspending the patient and applying a short trunk hose of felt similar in shape to bathing drawers, with the addition of traction on the leg by adhesive plaster straps. A plaster spica is next applied, with especial care to make it firm and well fitting beneath the tuberosity and as far down as the knee. A steel pattern with side irons, with notched cross pieces on the top, is fitted on the plaster bandage and secured in place by the bandage. When this is done, the extension straps are transferred from the pulley to the side irons and fastened to secure proper dragging. He claims that in this way a better fitting apparatus to the pelvis is given than if the same dressing is applied in the horizontal position.

B. Scharff[19] states that a number of published cases are quoted, but many of these, in his opinion, result from osteomyelitis, which he regards as much more common than the literature would indicate. He reports three cases of his own and considers that the causes may be (1) osteoporosis accompanying osteomyelitis or accompanying tuberculosis, and (2) interference with the epiphyseal growth at one side of the epiphyseal junction, and (3) a rarefying ostitis following operation due to trauma.

ORTHOPEDIC APPARATUS.

Dollinger[20] claims that in tubercular disease of the hip-joint distraction and fixation are to be considered as the hygienic conditions favorable to cure. Traction in bed not only distracts but fixes. The relief from pain, however, he considers to be due rather to the fixation than to the distraction. Traction is of service in correcting deformed positions of the joint, but for the correction of deformity, the author prefers

[15] Zeitschrift für orthopedische Chirurgie, Band vi, H. 2, 1899, p. 279.
[16] Revue d'Orthopédie, 1898.
[17] Loc. cit., No. 5.
[18] Zeitschrift für orthopedische Chirurgie, Band vi, H. 2, p. 219.
[19] Loc. cit., Band vii, p. 29.
[20] Loc. cit., p. 1.

gentle manual correction with repeated plaster-of-Paris bandage fixation, changed every three or four days. In affections of the spine head support is applied in all diseases above the seventh and eighth dorsal. At night the patient sleeps on a half shell of copper moulded over a plaster mould on a plaster jacket. In the daytime a plaster bivalve apparatus is used with a head support when necessary. In low lumbar disease a corset made of a light frame of metal with cross pieces in front over the chest, reaching from the upper part of the sternum to the pelvis, without pressure over the abdomen; and in the back a light frame on either side enclosing a lower central portion. For hip disease there are two forms of hip splint used, a short fixing thigh and pelvis apparatus and a long perineal crutch. In poor patients a plaster spica is used. In affections of the knee a fixation apparatus is used, but the perineal crutch is not. In fixations of the ankle-joint, a leather and metal support is applied with an arrangement by which the weight is borne upon tibial tuberosities, the heel being slightly raised.

RESECTION OF THE SACRO-ILIAC SYNCHONDROSIS.

Heyden[21] reports on the operative treatment of inflammation of these articulations, especially in tubercular affection. Twenty-eight cases were operated upon by Schader, the affected portion being removed by chisel. Of these 28, 11 were healed, three improved, 11 died, and one remained unhealed.

CHANGES IN THE VERTEBRÆ IN POTT'S DISEASE.

Menard[22] in an exhaustive study of specimens calls attention to the folly of speaking of a cure in Pott's disease after any short course of treatment. Study of sections shows foci capable of setting up active disease, where in the uncut specimen there seems complete consolidation. The number of vertebral bodies involved in a knuckle is seldom realized. The number, always at least as many as the spinous processes in the knuckle, may be six or eight without preventing the contact of the anterior edges of the vertebral bodies just above and below the diseased area. Thus the deformity is angular in front only; posteriorly the spinous processes are arranged like the ribs of a fan, while above and below in the compensatory curves the reverse may be true. The length of the knuckle varies with the number of bodies involved; the sharpness with the completeness of the folding forward, which may be only moderate even in cases of long standing, particularly in the dorsal region, owing to the ribs, but which is apt to be most extensive in the upper dorsal region. In the cervical region the pedicles and transverse processes may hinder the folding foward. A sequestrum may also hinder the infolding.

The mechanism of the deformity varies considerably. As a rule in the dorsal and lumbar regions the upper segment slips backward on the lower, then as the bending forward increases the bodies of the upper segment press on the lower and themselves ulcerate. Finally the upper segment settles forward. In certain cases lateral subluxation may occur, but the reason for this is not evident. While the bending forward may lead to a certain amount of ulceration of the bodies from pressure, and thus cause an increase in the deformity, it must not be forgotten that very often the disease progresses entirely independently of pressure, and that the destruction of the bodies considerably precedes the kyphosis. In connection with the relatively prominent dorsal and relatively small lumbar knuckles, the difference in the sizes of the bodies in each region is suggestive.

While usually the most extensive disease occurs in improperly treated cases, this is not always true. Patients may live with a remarkable amount of destruction, even of ten or eleven bodies. In certain cases in old people there may be a superficial subperiosteal erosion of the bodies for a long distance above or below the focus. In young people double foci are more apt to be found, which may later unite. While consolidation is going on in one place, the disease may be extending in another. It is not at all rare to find tuberculous disease of other joint bones or viscera associated with Pott's disease.

Coincident with the destruction of the bodies certain changes occur in the posterior arcs. The firm spinous processes are very rarely diseased, the pedicles which are nearer the bodies and made up of more spongy bone may be involved by the extension of the disease. The articular processes become the fulcrum, by which the vertebræ are in contact. The top of one articular process presses upon the middle of that above. Thickening and ulceration of the cartilages follow as a result of the abnormal pressure. Bony contact and ultimately bony union may occur, which may in time extend to the laminæ and spinous processes. Meantime, owing to the loss of the anterior attachments, there is a slipping backward and settling of the posterior area. This is greatest in the lumbar, where the laminæ are not closely applied, and least in the dorsal regions, and is most marked at the base of the knuckle. In cases of long standing there may be atrophy from vertical pressure and, possibly owing to trophic changes, diminution in the length of the laminæ and spinous processes.

The calibre of the bony canal is rarely, and even then only slightly, diminished. Paraplegia may result from pressure of an abscess backward into the canal, inflammatory thickening or edema behind the dura, pachymeningitis, pressure by débris or by a sequestrum. The part played by the sharp bend is not proved. Laminectomy is generally useless, while the drainage of an abscess spontaneously or by a costa-transversectomy may relieve a paraplegia. A forcible reduction may either increase or relieve a paraplegia.

For repair, arrest of progress and absorption of residue are essentials. The production of new bone is insignificant usually, and thus differs from the conditions in a fracture. New bone practically never fills up a cavity. Bony union occurs only in areas of abnormal pressure and follows no regular laws, except that it usually precedes healing, begins in the posterior area, and is but slight and irregular anteriorly as a rule. New bone may be formed from the periosteum anteriorly and may unite the bodies at the anterior angle, bridge over a cavity or form along a sinus. Apparently mixed infection through a sinus aids bone formation, and may thus aid consolidation and the arrest of the disease. Anchylosis between the bodies is more fibrous than osseous and amid the partially fused masses are usually small foci of dsease.

[21] Inaugural Dissertation, Bonn., 1898.
[22] Revue d'Orthopédie, May, July, September, 1899, vol. x, Nos. 3, 4, 5.

CARLOT'S METHOD OF REDUCTION OF DEFORMITY IN POTT'S DISEASE.

Carlot [23] reports the case of a girl three years of age who died of scarlet fever five months after the reduction. There was an abscess found at autopsy, extending backward and forward, penetrating the pericardium. There was no bone retraction at the point of deformity. He is not in favor of Carlot's attempt at union of the spinous processes after cutting away the prominent spines. He is of the opinion that Carlot's more favorable results than those obtained by other surgeons may be due to over-violence on the part of the latter.

THE ANATOMY OF CONGENITAL DISLOCATION OF THE HIP.

Hinsberg [24] describes the anatomical appearances in a case of congenital dislocation of the hip in a woman seventy years of age. The dislocation was double, and the woman in life had the characteristic gait. The thighs were adducted, and the spine presented marked lordosis. The patient was active as a child, but in the last years of her life she was confined to her bed. The muscular system showed characteristic changes. The gluteus medius was weak, pale, and fattily degenerated in its greater portion, but the anterior portion was fairly well developed. The gluteus minimus was pale and atrophic; the curve of the pyriform muscle horizontal, and in this muscle, as well as in the obturator internus, the contractile tissue was small, while the tendinous portion was well developed. The gemelli were more muscular; the obturator externus and quadratus femoris were well developed. The iliac psoas muscle showed peculiar changes. The internal iliac was reduced to a small number of muscular fibres not sufficient to cover the iliac bone; the psoas, however, presented a certain number of not very strong muscular bands. The alterations in the shape of the pelvis were not as great as would be supposed, the diameters being practically normal. The plane of the pelvis was altered to such a degree that it was vertical, the symphysis pubis being horizontal. The ends of the femora were greatly changed, and were not the same on both sides; on the right the head had almost entirely disappeared; the neck was short and not easily distinguishable. The trochanter was well developed. On the left the trochanter major was weaker, and the head and the neck were the same as on the right but with more marked alterations. The tip of the trochanter major was somewhat drawn inward. The alterations in the capsule were very marked, to such an extent that the capsule had become thickened and the part which lay between the head of the femur and the acetabulum had been transformed into a thick band which surrounded its upper portion, the top of the femur being attached between the neck and the greater trochanter. The capsule was universally thickened, and the ligamentum teres was absent. The capsule had been transformed into a strong ligament surrounding the trunk to the neck of the femur. A false capsule had been formed about the head and the neck, or more properly speaking, a space covered by tissues from the gluteus medius and minimus. There was no trace of any socket. The bony structure of the femur was altered in such a way that the osseous fibres which normally pass to the head, strengthening this portion of the bone, were abnormally developed on the direction of the trochanter, with an increase of spongy bone in the direction of the head.

[23] Heusner: Zeitschrift für orthopedische Chirurgie, Band vi, H. 2, 1899, p. 248.
[24] Loc. cit., H. 1, p. 86.

THE BLOODLESS METHOD OF TREATMENT OF CONGENITAL DISLOCATION OF THE HIP.

M. Kirmisson [25] reviews the articles of Koelliker [26] and Lorenz.[27] He agrees with Koelliker that the method usually does not really reduce the dislocation, but simply transposes the femoral head into a position near the acetabulum, securing thus a joint functionally more useful. Koelliker thus obtained two cures, 45 transpositions, and 11 failures. Kirmisson reiterates the views expressed in his "Traité des Maladies Chirurgicales d'Origine Congenitale." He admits that the functional result may be improved by the attempt at a bloodless reduction, but does not agree with Lorenz that a true reduction occurs. The operation is, except in rare cases, palliative only. Lorenz's own dissections show that a true reduction is usually impossible.

[25] Revue d'Orthopédie, March, 1899, p. 153.
[26] Centralblatt für Chirurgie, October 22, 1898.
[27] Wiener klin. Wochschr., December 1, 1898.

Reports of Societies.

THE OBSTETRICAL SOCIETY OF BOSTON.

MALCOLM STORER, M.D., SECRETARY.

Meeting of December 19, 1899, the President, Dr. A. Worcester, in the chair.

Dr. C. M. Green showed a

FIBROID TUMOR OF THE UTERUS APPARENTLY IN A STATE OF INCIPIENT MALIGNANT DEGENERATION.

Dr. E. C. Dudley, of Chicago, read by invitation a paper entitled

STRICTURE OF THE URETER A POSSIBLE RESULT OF LACERATION OF THE CERVIX UTERI, AND URETEROVAGINAL FISTULA A RESULT OF TRACHELORRHAPHY.[1]

Dr. Edward Reynolds: This paper is one that opens up fields of thought. The idea is a new one. I agree with the reader that the only way in which the ureter could have been injured was that it was drawn into reach by cicatricial contraction. Ordinarily it is too far off to be reached by any stitch that would be likely to be put into the cervix. I am inclined to think that in the reader's case the bougie was quite as likely stopped by the cicatrix as by the stitch. I have seen several cases in which the ureter was very close to the cervix indeed, though I never happened to notice whether in those cases the cervix was especially badly torn. I have been struck by the ingenuity displayed by Dr. Dudley in closing the fistula. The question however arises in my mind whether there might not be some danger in leaving so patulous an orifice to the ureter, in view of possible ascending infection. The only time I have had to build an orifice to a ureter was in a case in which in removing papillary growths in the bladder I was forced to remove the ostium of the ureter, and had to stitch its edge in such a manner as to bring the pout-

[1] See page 215 of the Journal.

ing mouth of the cut ureter into the bladder. Cystoscopic examination a few weeks later showed an apparently normal orifice. The orifice of the ureter is normally somewhat smaller than its tube; only an 8 or 9 French bougie will pass, while the ureter above will take a 15.

Dr. M. H. Richardson: Looking at the matter from an anatomical point of view, the ureters have much the same relation to the cervix as the common carotids have to the trachea, and are correspondingly liable to be injured. Traumatic lesions of the ureter should, however, be avoided by selecting methods of operation which permit you to see just what you are doing; there is no need of putting in a catheter to see where the ureter is; it is perfectly easy to find it in the course of an abdominal hysterectomy, for instance, by a little dissection. Tie and clamp only what you recognize and you will not injure the ureter. Personally I have never happened to see a wounded ureter. Every year I demonstrate to the students the various methods of dealing with them, some of which, as, for instance, the insertion of a wounded ureter into the bladder, are very beautiful procedures. While *a priori*, the possibility of a tear in the ureter coming from a laceration of the cervix would seem rather remote, further consideration does not make it seem so entirely impossible. I do not, however, think that the ureter could be torn as long as it is in easily distensible tissues, but if it is imbedded in a mass of inflammatory exudate such a tear might arise. I do not see just how it could be included in a stitch through the cervix. It would seem to me that in Dr. Dudley's case the suture passed to control the bleeding was far more likely the cause.

Dr. Engelmann: The important lesson to be deduced from a case like this is of course the effect of laceration upon the position of the ureter. I have seen the ureters displaced by pressure of tumors and also cases in which I thought lacerations of the cervix were the cause. I should think cicatricial drawing down might be a real condition, and of course pain resulting from that would not be helped in any way by restoring the cervix.

Dr. J. G. Blake: In looking up this subject the only reference I could find was that Emmet speaks of displacement of the ureter as being possibly caused by inflammatory changes. This case is certainly unique, and we should thank Dr. Dudley for having called our attention to a possible explanation of our failure to relieve symptoms in certain cases of restoration of the cervix.

Dr. Dudley: Undoubtedly stricture of the ureter may arise from traumatism, due to pressure by the child or from cicatricial contraction or from other causes which have nothing to do with parturition. I think we have little to fear from the suggestion of Dr. Reynolds that the ureter may remain too patulous and that it may therefore furnish a ready avenue for the passage of infection toward the kidney. I would more fear too much contraction at the ureterovesical orifice. In this case I was glad enough to have succeeded to re-establishment of the current of urine into the bladder. I really gave little thought to the possibility of an excessively large ureteral orifice. In this case there has been since the operation no indication of an ascending infection. Perhaps nature would establish a valve-like protection. As already stated, the lumen of the ureter is narrower at the vesical orifice than higher up. In this respect the ureter is like other ducts. The structures, however, surrounding the orifice are so elastic that they would readily stretch to the diameter of an instrument that would be large enough to measure the calibre of the ureter above. The chief purpose served by the operation on the cervix in this case was merely to disclose the stricture. I would especially emphasize the fact that there may be other cases like this one in which the operation of trachelorrhaphy would not fulfil the essential indication.

Recent Literature.

Hermann Ludwig Ferdinand von Helmholtz. By John Gray McKendrick, M.D., LL.D., F.R.SS.L. and E., Professor of Physiology in the University of Glasgow, and Fellow of the Royal College of Physicians of Edinburgh. Pp. 299. New York: Longmans, Green & Co. 1899.

This compact and attractively bound volume is one of a series on the masters of medicine, several of which have already appeared. The book is a summary of the life and scientific achievement of one of the greatest men of the nineteenth century, a man whose influence has been felt in many fields of research. Helmholtz's private life was of the simplest character and uneventful in other respects than scientific endeavor. He was from his earliest years a profound and absorbed student, and found little time or opportunity for travel. Beyond visits to England and one late in life to America, his life was passed in the studious atmosphere of German universities.

The writer of this comprehensive biography has done well in describing in outline the various scientific achievements of Helmholtz, even at the risk of detracting somewhat from the popular interest in his pages. This difficult task has been successfully accomplished, and we have in the sketch presented us a highly appreciative account, reduced to the smallest possible space, of the great scientist. The book is interesting throughout, in spite of many necessary technical details. A somewhat incomplete index and a bibliography, chiefly of the writings of Helmholtz, concludes the volume.

Bacteriology in Medicine and Surgery. By William Hallock Park, M.D., Associate Professor of Bacteriology and Hygiene, University and Bellevue Hospital Medical College, etc. New York and Philadelphia: Lea Brothers & Co.

This book is designed to be a text-book of bacteriology for students and also to be of use to physicians and health officers. The technical side of bacteriology is not extensively treated, for the book is not regarded as a laboratory manual. Special attention has been given to such subjects as the chemical changes produced by bacteria, infection, immunity, serum therapy and the diagnostic value of bacteriological cultures. Considerable space is alloted to the consideration of disinfectants and to other subjects such as interest officers of health boards. The book as a whole is by no means a thorough one, but it will probably be of some use to the class of readers to whom it is addressed.

The following errors or special defects have met our notice: On page 28 Hansen's name is misspelled.

On page 30 Canon is erroneously credited with a part in the discovery of the bacillus of influenza. The gonococcus is stated to be frequently capable of growth in the peritoneal cavity. This statement gives the impression that the organism is frequently found in that situation. As a matter of fact, cases of peritonitis in which the gonococcus has been demonstrated beyond question are extremely few. Its supposed frequent invasion of the peritoneum is largely the result of speculation and inference. The section dealing with the correction of the reaction of culture media by titration is very obscure and needs revision. The statement that smegma bacilli have never been identified in other parts of the body except in the neighborhood of the genitals is open to question, inasmuch as they are reported to have been observed in cases of gangrene of the lung. On page 378 what is apparently a misprint reads that two cubic centimetres of culture media are sufficient for each tube.

The book contains numerous reproductions of new photomicrographs of bacteria. These are for the most part disappointing, and are inferior to the well-known reproductions from Fränkel and Pfeiffer's "Photographic Atlas of Bacteria."

The book is attractively printed and bound, and contains 680 odd pages, with an index.

Refraction, and How to Refract. By JAMES THORINGTON, A.M., M.D. Pp. 301. Philadelphia: P. Blakiston's Son & Co. 1900.

This handy octavo volume is the result of a series of lectures delivered by Dr. Thorington to former pupils. The subject is treated systematically in twelve chapters that contain two hundred or more illustrations, some of them being in colors. Although this little book was intended for students' use, the practical ophthalmologist may find profit in its perusal. The sections allotted to retinoscopy and muscles are to be commended, and the chapter which explains the adjusting of frames, although more directly related to the mechanical part of the art, will certainly interest even the casual reader. There is a decided preference given to atropine as a cycloplegic over homatropine and some of the other more quickly acting and more ephemeral remedies. The many formulæ which are frequently brought into the text serve very well to elucidate the problems therein presented. There is a very good index, and the presswork is excellent.

Crockett's Gynecology. A Pocket Text-Book of Diseases of Women. By MONTGOMERY A. CROCKETT, A.B., M.D., Adjunct Professor of Obstetrics and Clinical Gynecology, Medical Department of the University of Buffalo, N. Y. Philadelphia and New York: Lea Brothers & Co. 1900.

This book has been handsomely put out by the publishers. The binding is attractive, the paper good, the type and illustrations neat. The latter, which are not profusely used, are mostly copied from recent text-books, notably Dudley's. The author has undertaken the very difficult task of condensing the subject matter of the larger text-books into 350 small pages, making but little other alteration of the material in the process, and has performed his task well. The book seems to be an excellent specimen of this type of work.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, MARCH 1, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.

SANATORIA FOR TUBERCULOSIS, AND PROPHYLAXIS.

No one subject is of more practical and absorbing interest, alike to the physician and sanitarian, than that of tuberculosis. The reproach so often raised against us that we are making no practical advance in the treatment of many diseases does not apply here. Tuberculosis is being treated rationally and successfully, and a beginning has certainly been made toward its ultimate extermination. This has been brought about, first, by the recognition of the underlying specific cause of the disease, and secondly, by painstaking care in its treatment when actually developed. Legislatures have come to recognize the necessity of hospitals devoted to the care of tuberculous patients, and we may look forward to the rapid increase of such institutions in the future. With this progress, rightly regarded as an achievement of great magnitude, we must not forget that, after all, the causes of tuberculosis lie far behind the bacteria, in those conditions which induce susceptibility, whether through hereditary transmission or, probably even more important, through unhygienic modes of life. We certainly need hospitals for consumptives, and a great many of them, but what we need still more is the extermination of the breeding places of tuberculosis, which exist in every one of our large cities, and are a constant menace to health. The ultimate problem is not to be solved by the hospital, but by the prevention of the conditions which make the hospital necessary. The housing of the poor becomes, therefore, of paramount importance, for it is in the tenement districts that we may look for the centres of disease. The recent agitation in New York regarding tenement house construction, and the conferences held relating to these public questions, will, no doubt, strike at the root of the evil. At the recently held tenement house exhibition, a model representing the most populous block in New York City was shown, where 4,000 persons live. Of the 2,639 rooms in the houses, only 1,198 have windows facing the outer air, and there is not a bathtub in the block.

This is undoubtedly a type of the place where reform should begin if disease is not to gain a firm foothold.

In a short paper on "Sanatoria for Consumptives" in the *St. Louis Courier of Medicine*, January, 1900, Dr. Beverley Robinson, of New York, makes certain vigorous statements which are well worth our attention. He says, in part, speaking of tuberculosis:

"Take the poor in our large cities and towns; are they not the ones most frequently affected, and for whose welfare we should be most concerned, since they are in much larger number? Let our legislatures, then, see to it that in the tenements the air supply is sufficient and good, let sunlight penetrate dark, ill-smelling rooms, let cleanliness be obligatory. Enforce proper oversight of food and water supply, and soon, very soon, tuberculosis will diminish very greatly. . . . Now, then, should we build sanatoria throughout our land, equip them with every modern improvement, make a large outlay of private or public funds, only after a shorter or longer period of rest, nursing, medical care, to send back these same persons either cured, improved, stationary or worse, to conditions and surroundings which are the source and origin, in my judgment, far more of the widespread pest of humanity than the *microbe*, whose inoffensiveness is demonstrable when the causes which breed it and make it important cease to exist? The microbic theory of disease is very well as a working basis for our sanitary corps, for our practitioners and even our surgeons, because everywhere it is recognized it makes *purity* through *cleanliness*. But when we lose sight of other great and important facts of medicine — old, and older than our civilization — it dwarfs the intelligence and leads to sad departures from common sense and logical deductions."

This is wholesome advice. It means no disparagement of the hospital for tuberculous patients, which we shall probably always continue to need, but it forces upon us the conviction, which we are sometimes inclined to forget, that natural means of combating disease are better than artificial ones, and that in fresh air and sunlight and cleanliness we have the strongest allies against disease in general, and particularly against tuberculosis.

SOME ANTIVIVISECTION "ARGUMENTS."

A LETTER of more than usual effrontery has appeared in a recent issue of a much read Boston evening paper, from the pen of J. M. Greene, Treasurer New England Antivivisection Society. After easily disposing of certain arguments raised by Mr. Olmsted's recent letter in the same newspaper, on the ground of Mr. Olmsted's ignorance of the subject, he proceeds to expose a degree of ignorance on his own part which is quite inconceivable, and which we are convinced can be of no benefit even to an unreasonable cause. We quote in part:

"Now, I beg to suggest that if you possessed that acquaintance with the subject which you now disclaim, you would not attach so much importance to the experiments you mention. You would then know that they are carried on by specialists as a commercial enterprise throughout the world, and the 'serum' products 'boomed' and sold at an enormous price without the slightest regard to their actual value. You would know that such experiments on consumption by Professor Koch were an absolute failure, and that there is no sign at present of any improvement in that direction. You would know that the 'plague serum' of Haffkine in the East was a fiasco, that the treatment was in many cases attended by an increase of the disease, and that the disease is now spreading. You would remember that such experiments on yellow fever (during which human beings in Montevideo, S. A., were deliberately poisoned to death by Professor Sanarelli, inasmuch as experiments on the lower animals were found to be inadequate) have been empty of results, the 'bacillus' even of the disease not yet being secured. You would be aware of the fact that Behring's diphtheria antitoxin, so much vaunted and advertised, is as collossal a fraud as has yet been imposed upon a suffering public; that the only virtue in said antitoxin resides in the carbolic acid in which it is preserved; that carbolic acid in water alone produces better results without the injurious effects upon the vital organs often caused by the serum."

And why should we be asked to bow down to the authority of Mr. Herbert Spencer in a matter relating to the serum treatment of disease? These "arguments" are beyond our comprehension.

MEDICAL NOTES.

ANOTHER EXTRAORDINARY LAW SUIT. — A decision of unusual interest has been handed down from the Illinois State Supreme Court. The suit was against a Chicago hospital, brought by an infant, in which it was sought to recover damages to the extent of $50,000 for injuries sustained by the plaintiff before his birth. Shortly before the birth of the child the mother was in St. Luke's Hospital, and while being transferred from one floor to another her leg was caught in the elevator and crushed. When her child was born his left foot, left side and left leg were paralyzed and deformed. The mother brought suit for the child. A general demurrer to the declaration was sustained by the Supreme Court on the ground that at the time of the accident the child could not be credited as a separate being, capable of sustaining an action independent of the mother. "If an action can be maintained," the Court says, "it necessarily follows that an infant may maintain an action against its own mother for prenatal injuries." In such a case it would likewise appear necessary to establish beyond question the fact that the injury to the child was actually due to the accident to the mother, and was not a coincidence merely. In this instance the latter hypothesis would appear the more reasonable.

REVIVAL OF AN "INDEX MEDICUS." — It is announced that beginning with February 15, 1900, a publication devoted to an International Bibliography of the Medical Sciences will appear monthly, on the general plan of the now discontinued American *Index Medicus*. The undertaking is under the auspices of the Institut de Bibliographie of Paris. Each number will comprise about 80 pages, appearing the fifteenth of each month, and containing an international bibliography of the preceding month. Letters, communications, books, etc., should be addressed *franco* to M. le Dr. Marcel Baudouin, editor-in-chief, at the Institut de Bibliographie, 93, Boulevard Saint Germain, Paris.

FAMINE AND PLAGUE IN INDIA.— It is reported that over 61,000,000 persons in India are affected by the prevailing famine, while only about 4,000,000 are receiving relief. In spite of these facts the death-rate through the affected district of 550,000 square miles is decreasing. The Indian Government has issued a resolution approving Professor Haffkine's anti-plague inoculation, and the viceroy, Lord Curzon, is advocating its use.

A STATUE OF HAHNEMANN. — A bill has recently passed Congress appropriating $4,000 for the pedestal for a statue of Hahnemann, to be erected in Washington by the homeopathic physicians of the United States, and authorizing the selection of a site for this statue on a public reservation.

PLAGUE REPORTED AT HILO.— The War Department has received news reporting the presence of plague at Hilo. This is the only Hawaiian port at which American vessels have stopped since plague broke out at Honolulu.

FAMILY PHYSICIANS IN MONTANA. — Queer family physicians they have in Montana. The testimony in the senatorial bribery case indicates that some of them spell themselves heelers.— *Herald.*

AGED ONE HUNDRED AND FOUR. — Rev. Booker Fox, of Ottumwa, Iowa, an evangelist, died recently, aged one hundred and four. He was born at Nashville, Tenn., in 1796.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the eight days ending at noon, February 28, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 106, scarlatina 52, measles 58, typhoid fever 9.

AID FOR THE WEST END NURSERY.— The result of a recent fair in aid of the West End Nursery and Infants' Hospital resulted in the receipt of $5,450.

A BEQUEST TO A HOSPITAL. — Through the will of the late Benjamin Sweetser the New England Hospital for Women and Children receives $2,000.

DECREASE OF DISEASE IN BOSTON.— Last week the health of the city was better than it had been for a long time; encouraging health reports were received from all parts of the State of Massachusetts. There was a large decrease in the number of cases of diphtheria and scarlet fever, and there is ample room at the City Hospital for the proper isolation of all cases which come under the observation of the Board of Health. The number of deaths reported for the week is 227 as against 255 the corresponding week last year, showing a decrease of 28 deaths, and making the death-rate for the week 21.3. The number of cases and deaths from infectious diseases is as follows: Diphtheria, 76 cases, 9 deaths; scarlatina, 43 cases, 5 deaths; typhoid fever, 3 cases, no deaths; measles, 47 cases, 1 death. The deaths from consumption were 27; pneumonia, 42, and heart disease, 27.

NEW YORK.

A QUESTION OF JURISDICTION. — The authorities of New York having claimed the right, under the charter of the city, to inspect the buildings of the State hospitals for the insane located within the city limits and to direct the manner of construction of new buildings for such hospitals, the Attorney-General has now decided that the city has no such jurisdiction. The opinion was requested by State Architect Heins, in view of demands made by the City Police Department to inspect and license boilers to be operated at the Manhattan State Hospital on Ward's Island, and by the Buildings Department of the city to supervise the erection of an ice-house at the Long Island State Hospital at Flatbush. Attorney-General Davies, in his opinion, denies that there is anything in any provision of the charter conferring such jurisdiction, and claims that the right of the State to manage and control the State hospitals, free from interference or supervision of the city of New York, is an attribute of sovereignty which has not been relinquished or in the slightest degree bestowed upon the city, so far as pertains to this matter. In support of this opinion he cites the fact that under an act of 1896 the State specially permitted peace officers to exercise their authority upon the hospital grounds and premises, thus in effect declaring the principle that local jurisdiction over lands owned or under the control of the State are excluded from municipal supervision, unless a special permit or privilege therefor is provided by the State.

ANNUAL REPORT, STATE BOARD CHARITIES.— The State Board of Charities submitted its annual report to the Legislature on February 19th. Generally speaking, the board finds that the conditions among the dependent poor have improved during the year. The Kings County Almshouse and Hospital, in Brooklyn, are condemned as inadequate and in bad sanitary condition. The establishment of a State hospital and of municipal hospitals for consumptives is recommended. The present Commissioner of the Department of Charities in New York City, and the efficiency of the institutions under his control, receive high commendation. There is also warm praise for the Craig Colony for Epileptics, where additional accommodations are asked for. In regard to the law enacted last year for the prevention of the abuse of

medical charity, the report says: "The operation of the law as observed by the department has already had the effect to abolish that misnomer, the private dispensary. It had long been the custom for physicians practising among the poor, especially in the Borough of Manhattan, New York City, to conduct their East-side offices under the name of this or that dispensary. The law, however, makes clear the intention to limit the use of the word dispensary or its equivalent to the operation of a charitable enterprise. A second result is the withdrawal from the dispensaries of that class of persons who, able to pay for medical treatment, prefer to do so rather than to sign application cards.

The Tenement House Question. — The Tenement House Exhibition closed on February 24th, and on every evening during its last week there were conferences and public discussions in the rooms where it was held. The series was opened by Lawrence Veiller, Secretary of the Tenement House Committee of the Charity Organization Society, who made an address on "The Exhibition and its Meaning." The exhibition, he said, had been prepared for the purpose of stimulating interest in the tenement house problem by placing before the public in concrete form a clear and comprehensive statement of existing conditions, so that intelligent action might be taken to remedy them. The solution of the problem, he thought, lay along three distinct lines: (1) Through the enactment of wise restrictive legislation; (2) through the building of model tenement houses as commercial enterprises; (3) through the improvement and proper management of existing old tenements and the condemnation of buildings unfit for habitation.

Opposition to a Small-pox Hospital. — Two cases of small-pox having appeared in New Rochelle, Westchester County, the Board of Health promptly bought an acre of land a short distance outside of the city and proceeded to erect a frame isolation hospital. The neighboring farmers, however, were so strongly opposed to having the pest-house in their vicinity, that they forced the carpenters who were engaged on it to desist from work, and it was not until the aid of the police department had been secured that the building could be completed.

Quadruplets. — The wife of a German grocer living on East Fourth Street recently had four children at a birth, three of whom were males. All four were born alive, but they were quite small, weighing only about two pounds each, and only survived for a few hours. The mother, who on a previous occasion gave birth to twins, is reported as doing well.

ARMY NOTES.

Plague. — A report has recently been received from Major Taylor, chief surgeon in the Hawaiian Islands, concerning the prevalence of bubonic plague in Honolulu. Up to January 22d there had been a total of 46 cases, with 40 deaths. The whole town has been districted and each house is inspected twice daily and the condition of the inmates noted. During the burning of a portion of Chinatown, the flames got beyond control and destroyed nearly all the district, rendering about 4,000 Chinese and natives homeless. It is apprehended, while the destruction of the native quarter was providential, that during the confusion incident to the conflagration, much household property was removed to widely scattered points, and that new foci of infection have thus been created. While no cases of plague have occurred among the United States troops at Honolulu, a temporary hospital has been established in readiness for a possible outbreak, and a detention camp for suspects has been provided. The hospital is excellently located, is abundantly equipped for any emergency and has an ample *personnel* of nurses and hospital-corps men.

Vital Statistics of Havana for 1899. — A report on the vital statistics of Havana for the year 1899 shows that in an estimated population of 220,000, there were 8,153 deaths from all causes; 1,163 of these being due to enteritis and 1,307 to tuberculosis. Yellow fever occupies a relatively low position on the list, only 103 deaths having resulted from this disease. Leprosy was the cause of 11 deaths. The number of contagious and infectious diseases of all kinds reported amounted to 6,442; of which 284 were yellow fever. The births during the year numbered 4,181, of which 1,516 were illegitimate.

Insane Soldiers. — Newspaper statements having been made to the effect that about 500 soldiers serving in and around Manila had become insane and had been returned to the United States in this condition, an official investigation has been made as to the truth of these statements. It has been found that since the outbreak of the war with Spain, a total of 223 men have been committed to the Government Hospital for the Insane by the Secretary of War, of which 129 have since been discharged. Of the total number of 223, only 37 men served in the Philippines, and of these 11 have been discharged as cured.

Increase in Army Medical Corps. — It is understood that the bill proposed by Surgeon-General Sternberg for a much needed increase in the Army Medical Corps has received the full support of the Secretary of War, and will soon come up for Congressional action.

Miscellany.

THE TENEMENT HOUSE AND TUBERCULOSIS.

At one of the conferences at the recent Tenement House Exhibition in New York, Dr. S. H. Knopf read a paper on "The Tenements and Tuberculosis." The disease, he said, is an endemic of the tenement house. The cases are far more numerous than the reports to the Board of Health show, and the tuberculous invalid who is up and supporting his family is perhaps the greatest danger to the community. So long as the

present laws governing the building of tenements exist, so long will special hospitals continue to be daily recipients of cases created anew. While the establishment of sanatoria will be of great service, the most important factor in solving the tuberculosis problem will be the proper housing of the poor. With modern tenement houses, under adequate management, the danger from tuberculosis, as from other infectious diseases, would be reduced to a minimum.

At the last conference Jacob Riis, author of "How the Other Half Lives," was the principal speaker. In the course of his remarks he said: "We are not struggling with a problem peculiar to New York. The battle is an old one, and exists in every country. Human greed is still potent for harm, and the tenement house evil is a greater menace to a republic than to a monarchy. I thank God that we are at last talking about souls in tenement houses, and not about so many soulless creatures that only exist to pay rent. In 1857 the people first awoke to the fact that poorly ventilated tenements and bad plumbing caused disease. The committee sent down by the Legislature to make an investigation found that the infant mortality was something frightful to think of, and it reported that the condition of the tenements was chiefly responsible for the trouble, and that poverty should not be compelled to commit suicide by living in houses put up by conscienceless builders. Ten years later another legislative committee found that of 18,582 tenements in New York, 52 per cent. were dangerous to the lives of the persons residing in them and detrimental to the health of the entire city. Moreover, in 32 per cent. of this number the trouble arose purely from overcrowding and neglect of ordinary sanitary precautions by the landlord. Both of these committees laid down lines to overcome the evil. One of the suggestions was that tenements should be licensed to hold a certain number of persons and that the landlord should be held rigidly accountable for any excess of that number. There are now some 40,000 tenements, and if each of them had to pay a license fee of $2.00 a year, the sum realized would be sufficient to pay the entire expense of maintaining the sanitary police, which does nothing else but see that landlords obey the law. It is interesting that, whereas the committees came down to find out what was the matter with the people, they reported that the trouble was entirely with the tenements. The people were better than their houses. Our fight is for the American home. Without homes there is no family, no manhood, no patriotism. The way out of the difficulty is to arouse the public conscience and keep it aroused. The builder should be compelled to realize that he is his brother's keeper. He would not be allowed to murder his brother with a knife — he should not be permitted to murder him by cutting off his air and sunlight."

DETERMINATION OF SEX AT WILL.

THIS ever interesting question has a new expositor in Dr. J. Griffith Davis, who writes in the current number of the *New York Medical Journal* her theories and deductions. Her idea is based on observation and to a certain extent on experiment among the lower animals, which have left her with certain perfectly definite convictions. The whole matter, to her mind, rests upon the exact time, in relation to menstruation, that impregnation takes place, or as she much more euphemistically puts it, upon the date at which a "guest is invited." Guests invited from three days before to about eight days after the menstrual period are likely to be girls, whereas those invited from the tenth to the fifteenth days are almost sure to be boys.

The ninth day is a doubtful time, in which two guests may arrive — twins — or, if but one, that one may be of either sex, but usually having characteristic attributes of the other sex. The success of this plan in practice evidently demands a painstaking oversight of the sexual life of the parents, and much discriminating self-denial in offering hospitality to guests. Interesting as the facts may be, we see some slight difficulty in putting the plan into active operation among members of the human family.

Obituary.

W. H. H. HASTINGS, M.D.

DR. W. H. H. HASTINGS died suddenly in Boston, after a brief illness, February 16th. He was about sixty years of age, and graduated from the Harvard Medical School in the class of 1868. He was successful as a practitioner of medicine, had a good practice and his patients were much attached to him. It was, however, as Superintendent of the Boston Dispensary that he was best known. His life work was in connection with this old and most useful institution. He served as superintendent for twenty-four years, and his official relations to the Dispensary covered at least a quarter of its existence. Its present commodious home was erected under his supervision, and its departments and staff of medical attendants have been constantly and judiciously increased during his tenure of office. To-day the medical staff of the Boston Dispensary consists of not less than seventy members. Although appointments rested with the Board of Managers, the selection of candidates was largely in the hands of the superintendent, and this responsibility was almost invariably discharged by Dr. Hastings with excellent judgment and discretion. In the advice which he was called upon to give, and the general administration of his office, the balance was kept adjusted between the zealous enthusiasm of young professional men and the wholesome conservatism of a managing board, so that the sick poor profited by the best to be had both from the medical and business men of this community.

Dr. Hastings combined firmness with sweetness of character in just proportions. The work which he did in Boston will be no better done, whoever his successor may be.

Correspondence.

STREET PAVING IN BOSTON.

BOSTON, February 25, 1900.

MR. EDITOR: — At a meeting of the Medical Improvement Society, on February 19th, the evils of dusty streets were described, and the remedy proposed of asphalting the entire Back Bay district. A number of papers were read upon the irritating and inflammatory effects of dust, and an account given of its possibilities as a conveyor of infection.

It would have been interesting in this connection to have had some information as to whether during the past winter any marked increase of disease had been noticed among the classes most exposed to dust, such as the hackmen, postmen and outdoor laborers of the Back Bay. After the medical papers a gentleman who is, I believe, a

constructor of asphalt roadways read an essay on "Asphalt and its Merits as a Pavement." Two or three other gentlemen, who spoke as experts, seemed to favor asphalt.

Apparently there had been no arrangement made for a statement of the disadvantages of asphalt paving, or for the merits of any other kind of roadway. For instance, there is a company in Philadelphia which constructs brick pavements. There is a specimen of this on Arlington St., which certainly does not seem to have worn very well, yet it would have been desirable to have had a representative of the company to explain its claims for consideration. Presumably, he could have pointed out some of the disadvantages of asphalt. The brick pavement has certainly two merits, one that it affords some foothold for horses, and the other that it will bear any amount of water, which asphalt will not. Granting, however, that Beacon St., which has become a street for heavy traffic, and Marlborough St., which is somewhat in the same category, would be benefited by asphalt surfacing, it does not follow it would be necessary to carry this over the rest of the Back Bay. As far as the inhabitants of the above streets are concerned, they get very little dust from the south. When the wind is in that quarter it generally rains. Our great dust-storms are caused by the northwest winds.

There is a dusty area towards the west to which all our Back Bay streets lead, where the northwest wind has full play and will have until this region is built up. For Beacon St. and Marlborough St. dwellers to complain that they would get dust from Commonwealth Ave. finds its historic parallel in the accusation of the wolf against the lamb. The terrible heat in summer from a large district covered with asphalt, which would affect the comfort of the whole city, and its injurious effect upon the eyes are self-evident. It may also be mentioned that while asphalt diminishes the noise of wheels of heavy teams, it makes a ringing sound when struck by horses' shoes which is very annoying to many, and would to that extent be harmful to nervous invalids.

As regards Commonwealth Ave., for which I am principally concerned, it should continue a macadamized park road. Asphalt is, under certain conditions, which occur more frequently in the winter, very unsafe for travel, and there should be at least one road out of the city that could be used at all times. With proper care and proper watering, which it has not had, it could be made comfortably free from dust; and when we speak of proper care, this applies to all roadways. Asphalt must be kept scrupulously clean, else its quality as a non-absorbent renders it a menace to health instead of an advantage. Proper care may be promised and provided for, yet with the geographical position of our streets and the usual municipal manner of care-taking, it is more than probable that this cleanliness would prove to be an iridescent dream. I fear that this communication is reaching too great a length, but in view of what I have already stated, it seems to me that the Society did not approach the subject in exactly a judicial way. None of the above objections were put forth, presumably because every one had made up his mind beforehand. The writer, though not fully prepared, was strongly tempted to make some remarks, but when the opportunity came, the lateness of the hour and the unanimity of the audience determined him to simply utter a few words of protest against this sweeping scheme of asphalting the whole residential portion of the Back Bay.

Very truly yours,
S.

[The "two or three other gentlemen" referred to by the writer were: Dr. S. H. Durgin, Chairman of the Boston Board of Health, C. Frank Allen, Esq., Professor of Railroad Engineering in the Massachusetts Institute of Technology, and W. E. McClintock, Esq., Instructor in Highway Engineering in the Lawrence Scientific School of Harvard University, also connected with the Massachusetts Commission for State Highways.

As additional disinterested testimony we reproduce replies received in answer to a circular letter sent out by Dr. Henry O. Marcy in 1894.[1] They represent, purposely, several of our larger cities in widely varying latitudes with marked variations of climate:

CHIEF SANITARY INSPECTOR'S OFFICE,
ATLANTA, GA., July 23, 1894.

DEAR SIR: — Your letter of July 20th to hand, and in reply will state that I consider the "asphalt paving" the prettiest paving for your avenues in Boston; it is easily kept clean, is noiseless, and would give entire satisfaction. Any further information I will gladly furnish.

Very respectfully,
THOS. E. VEAL,
Chief Inspector.

CITY SURVEYOR'S OFFICE,
MONTREAL, CAN., July 23, 1894.

DEAR SIR: — I am in receipt of your letter of July 20th, asking me for my opinion as to the best pavement to be used for a residential street with light traffic thereon. I would certainly recommend Trinidad asphalt. We have had Trinidad asphalt laid by the Warren Scharff Co., of New York, and it has stood this climate for seven years with heavy traffic.

Yours truly,
P. W. ST. GEORGE,
City Surveyor.

OFFICE OF CITY ENGINEER,
SAVANNAH, GA., July 25, 1894.

DEAR SIR: — Your note of July 20th came to hand and contents noted. The city of Savannah has a great many streets paved with asphalt, and it gives entire satisfaction. The Warren Scharff Paving Co. has done most of our work. It stands heavy traffic as well as light.

I am yours respectfully,
JOHN FITZGERALD,
Superintendent of Streets.

DEPARTMNET OF PUBLIC WORKS,
CHICAGO, July 23, 1894.

DEAR SIR: — Your favor of July 20th, relative to asphalt pavement received. We have 16.65 miles of sheet asphalt streets in this city. This class of improvement when well laid has given general satisfaction on resident streets in this city. Dearborn Avenue, which was improved with asphalt eleven years ago, has just been repaired at an expense to the city of $570. It is now in as perfect condition as it was when originally completed.

Yours very truly,
JOHN MCCARTHY,
Superintendent of Streets.

DEPARTMENT OF PUBLIC WORKS, COMMISSIONER'S OFFICE,
No. 31 CHAMBERS STREET, NEW YORK, July 24, 1894.

DEAR SIR: — In answer to your inquiry of July 20th, regarding experience in this city with asphalt pavements, I beg to say that the experience of the last six years has shown good asphalt to be the very best pavement for residential streets and on streets used for pleasure driving, provided the grades are not too steep; that is, not to exceed 4 in 100. It has many advantages over macadam or stone, in being noiseless, impervious to liquid filth, easy to keep clean, and about one-fourth less expensive to maintain. We have now in this city fifty-five miles of asphalt pavement, nearly all in private residential and tenement house districts.

Very respectfully,
MICHAEL T. DALY,
Commissioner of Public Works.

STREET DEPARTMENT, STREET COMMISSIONER'S OFFICE,
ST. LOUIS, MO., July 24, 1894.

DEAR SIR: — Answering your favor of July 20th, would say we have a little over 100 miles of asphaltum streets in St. Louis, and they are giving entire satisfaction to the tax-payers. We have not confined the use of asphaltum streets to light traffic alone, as we have roadways here paved with that material over which from 5,000 to 7,000 vehicles pass daily with loads of from 1,000 to 10,000 pounds. Personally and officially I am in favor of asphalt for paving all classes of streets.

Very respectfully,
M. J. MURPHY,
Street Commissioner.

ED.]

[1] Sanitation in Street Pavement. Reprint, 1895.

METEOROLOGICAL RECORD

For the week ending February 17th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.			Relative humidity.		Direction of wind.		Velocity of wind.		We'th'r.*		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S...11	30.29	33	37	29	89	90	N.	N.	12	7	N.	O.	
M..12	30.38	37	40	34	100	96	N.E.	E.	4	13	R.	R.	.03
T...13	29.71	48	60	35	96	72	S.E.	W.	21	18	R.	O.	1.50
W..14	30.07	34	40	29	62	39	50	W.	W.	24	17	C.	C.	
T...15	29.91	38	47	29	54	56	55	S.W.	S.W.	8	16	O.	C.	
F...16	30.05	25	29	21	58	37	48	N.W.	N.W.	12	8	O.	F.	
S...17	29.95	25	29	21	55	96	76	N.	N.E.	10	20	O.	N.	.08

☞

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☞ Blanks for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, FEBRUARY 17, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Typhoid fever.	Diphtheria and croup.	Measles.
New York	3,654,394	1447	489	21.70	25.76	.25	3.78	1.47
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	503	163	20.00	2.00	2.80	5.40	1.40
St. Louis	623,000	—	—	—	—	—	—	—
Boston	559,416	226	64	25.08	20.24	.88	5.28	—
Baltimore	508,389	220	83	16.65	9.00	.45	3.15	—
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	115	41	31.32	13.92	10.44	3.48	1.74
Washington	277,000	98	36	20.00	15.00	2.00	3.00	1.00
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	86	31	27.84	24.36	1.16	1.16	9.28
Nashville	87,754	32	8	12.52	25.04	—	—	3.13
Charleston	65,165	35	13	14.30	17.16	—	—	—
Worcester	111,732	40	15	12.50	27.50	—	2.50	—
Fall River	103,142	28	16	7.14	14 28	—	—	—
Cambridge	92,520	24	12	12.48	37 44	—	12.48	—
Lowell	90,114	32	8	12.50	12 50	—	3.13	—
New Bedford	70,511	25	11	—	28.00	—	—	—
Lynn	68,218	22	7	24.90	12.45	4.15	4.15	—
Somerville	64,394	25	8	8.00	20.00	4.00	—	—
Lawrence	59,072	17	11	23.52	29.40	—	—	—
Springfield	58,266	21	4	23.80	4.76	—	4.76	—
Holyoke	44,510*	9	5	11.11	—	11.11	—	—
Brockton	38,750	—	—	—	—	—	—	—
Salem	37,723	18	4	11.11	5.55	—	—	—
Malden	36,421	6	2	16.66	—	—	—	—
Chelsea	34,235	14	2	21.42	—	—	7.14	—
Haverhill	32,651	8	1	12.50	12.50	—	—	—
Gloucester	31,426	11	3	36.36	—	—	9.09	—
Fitchburg	30,523	6	3	—	—	—	—	—
Newton	30,461	11	2	9.09	9.09	—	—	—
Taunton	28,527	9	1	22.22	11.11	—	—	—
Everett	28,102	5	3	40.00	—	20.00	20.00	—
Quincy	24,578	7	3	—	42.84	—	—	—
Pittsfield	23,421	—	—	—	—	—	—	—
Waltham	22,791	6	1	—	33.33	—	—	—
North Adams	21,583	8	2	12.50	—	—	12.50	—
Chicopee	18,316	5	2	20.00	—	—	—	—
Medford	17,190	6	—	—	—	—	—	—
Newburyport	15,636	6	1	16.66	33.33	—	—	—
Melrose	14,721	1	—	—	—	—	—	—

Deaths reported 3,140; under five years of age 1,059; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 652, acute lung diseases 705, consumption 335, diphtheria and croup 120, typhoid fever 41, measles 41, scarlet fever 41, diarrheal diseases 24, whooping-cough 21, erysipelas 15, cerebrospinal meningitis 14.

From scarlet fever New York 21, Boston 12, Philadelphia 3, Baltimore 2, Pittsburg, Washington and Malden 1 each. From diarrheal diseases New York 12, Philadelphia and Baltimore 3 each, Pittsburg and Charleston 2 each, Boston and Salem 1 each. From whooping-cough New York 13, Baltimore 2, Philadelphia, Boston, Pittsburg, Washington, Charleston and Lawrence 1 each. From erysipelas New York 8, Pittsburg and Providence 2 each, Philadelphia, Boston and Baltimore 1 each. From cerebrospinal meningitis New York 10, Worcester 2, Boston and Baltimore 1 each.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING FEBRUARY 24, 1900.

R. WAGGENER, pharmacist, granted sick leave for four months.

J. R. MURPHY, assistant surgeon, appointed assistant surgeon.

KARL OHNESORG, assistant surgeon, ordered to temporary duty at the Naval Academy.

W. G FARWELL, medical director, commissioned medical director from January 22, 1900.

D. N. BERTOLETTE, medical inspector, commissioned medical inspector from January 22, 1900.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING FEBRUARY 22, 1900.

MEAD, F. W., surgeon. Granted leave of absence for seven days from February 20th. February 19, 1900.

CARTER, H. R., surgeon. To proceed to Havana, Cuba, and resume duties as quarantine officer. February 17, 1900.

GUITERAS, G. M., passed assistant surgeon. Upon being relieved by Surgeon H. R. CARTER, to proceed to Matanzas, Cuba, and resume duties as quarantine officer. February 17, 1900.

PERRY, J. C., passed assistant surgeon. Detailed as chief quarantine officer of the Philippine Islands, and quarantine officer at the port of Manila. January 18, 1900.

ROSENAU, M. J , passed assistant surgeon. Detailed to attend the meeting of the Medico-Legal Society at New York, N. Y., February 21st and 22d. February 19, 1900.

EDSON, E. R., assistant surgeon. Relieved from duty at the Reedy Island Quarantine Station, and directed to proceed to the Gulf Quarantine Station for duty and assignment to quarters. February 17, 1900.

SOCIETY NOTICE.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. — A regular meeting of the Society will be held at the Medical Library, 19 Boylston Place, on Monday, March 5th, at 8 o'clock.

Subject: "Some Advances in Medical Instruction."

Prof. Wm. T. Councilman: "The Course in Pathology at the Harvard Medical School."

Dr. Herbert L. Burrell: "The Case System in Surgery."

Dr. Arthur H. Wentworth: "Section Teaching."

Mr. W. B. Cannon: "The Case System."

ARTHUR K. STONE, M.D., *Secretary*, 657 Boylston Street.

THE ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES.

THE SANDER PRIZE.

Rules for competition for the Gold Medal of the value of $100, dedicated by Mr. Enno Sander, of St. Louis, for the best paper on Military Surgery, presented at the Annual Meeting of the Association of Military Surgeons of the United States.

1. Competition to be open to all members of the Association.

2. Each competitor shall send three copies of his essay, in a sealed envelope, to the Secretary, Lieut.-Col. Chas. Adams, Central Music Hall, Chicago, Ill., on or before April 15, 1900. The essay must be strictly anonymous, but the author shall adopt some *nom de plume* and sign the same to the essay, followed by a figure corresponding with the number of pages of the manuscript. A sealed envelope bearing the *nom de plume* on the outside, and enclosing full name and address shall accompany the essay. This envelope to be opened in the meeting of the Association after the decision of the Committee on the Prize Essay has been received.

3. The Committee will designate the essay worthy of the prize, and also in their order of merit those deserving of honorable mention. Should the Committee deem proper, it may recommend neither prize nor honorable mention.

4. The successful paper shall be published in the *Transactions* of the Association.

COL. N. SENN, Surgeon-General, I. N. G.
MAJ. A. C. GIRARD, Surgeon, U. S. A.
CAPT. GEO. W. WOODS, Medical Director, U. S. N.
Committee.

RECENT DEATHS.

EDWARD AUGUSTUS PERKINS, M.D., M.M.S.S., died in Boston, February 20, 1900, aged seventy-two years.

GEORGE MORRILL FRENCH, M.D., M.M.S.S., of Malden, died at Suncook, N. H., February 23, 1900, aged forty-five years. Dr. French was born at Sandown, N. H., and received his medical education at the Harvard Medical School. He had practised medicine about fifteen years at Malden. He is survived by a widow, a son and a daughter.

EDWARD F. MARTIN, M.D., who for twenty years was connected with the New York City Board of Health and who had recently been appointed Chief Food Inspector, died at his home at Elmshurst, Long Island, on February 24th, from Bright's disease. He was forty-four years of age.

JOSEPH M. CREAMER, M.D., of Brooklyn, New York, died on February 23d at the age of forty-six. In 1892 he was elected coroner, and served for three years. He was a son of Dr. Joseph F. Creamer, a well-known surgeon who died about six years ago.

SAMUEL R. FORMAN, M.D., of Jersey City, N. J., died on February 19th, from Bright's disease. He was a graduate of Princeton University and of the College of Physicians and Surgeons, New York, and was sixty-four years old.

BOOKS AND PAMPHLETS RECEIVED.

The Surgical Aspects of the Modern Small-Bore Projectile. By August Schachner, M.D., Louisville, Ky. Reprint. 1900.

Proceedings of the American Medico-Psychological Association at the Fifty-fifth Annual Meeting, held in New York, May 23-26, 1899.

Original Articles.

REMARKS ON THE INFLUENCE OF TECHNIQUE UPON THE RESULTS OF CLOSURE OF WOUNDS OF THE ABDOMINAL WALL.[1]

BY CHARLES P. NOBLE, M.D.,
Surgeon-in-Chief, Kensington Hospital for Women, Philadelphia.

It is my intention this evening to bring before you a number of points in the technique of the closure of wounds of the abdominal wall, and to report my own experience therewith as a contribution to what I hope may prove a valuable discussion upon these subjects.

There are a number of methods advocated for the closure of the wound in celiotomy cases. What may be called the classical method is that in which interrupted through-and-through sutures of non-absorbable suture material are employed. Silk, silver wire and silkworm gut have been advocated at various times. This method was universally employed by our predecessors, and probably to-day it is the method which has the greatest number of adherents. The advantages of the method consist in the rapidity with which the wound may be closed, and the comparative simplicity of the technique. The objections to the method are the relative frequency of hernia following its employment, and the relatively high percentage of wound infection and stitch-hole abscesses. I shall assume that these statements do not require statistical proof. Hernia is most frequent in the case of fat subjects and in those in which drainage has been employed — especially gauze drainage. The reasons for this are anatomical and self-evident. In thin subjects, when the suturing is carefully done, it is feasible to approximate with relative accuracy the component structures of the abdominal wall, restoring these structures approximately to their normal status. When drainage is employed, this is at once prevented at the site of the drainage opening. In fat subjects the mechanical difficulties of applying the sutures bring about the same result, and the component structures of the abdominal wall are not accurately approximated, and more especially the continuity of the aponeurosis of the transverse muscles is not restored. For this reason, in my judgment, this method of closing the abdominal wound should be reserved for the small class of cases in which drainage is necessary, and another limited class of cases in which, owing to the general condition of the patient, the saving of even a few minutes in the duration of the operation is of importance. It is my opinion that the explanation of the relative frequency of stitch-hole abscesses, when this method of closure is adopted, is that in order to close the abdominal wound with a single row of sutures, it is frequently necessary to tie these sutures under tension. In this way the circulation is interfered with, the vitality of the tissues is lowered, and any germs which may be present, whether the skin cocci or other, have a favorable field for action.

The foregoing considerations caused me to abandon through-and-through sutures in 1892, and since that time tier sutures have been employed as a routine method. The character of the suture material and the method of its employment have been changed several times. From May, 1892, until January, 1897, a row of interrupted silkworm-gut sutures was buried at the level of the aponeurosis, uniting the aponeurosis, recti muscles and peritoneum; and a second row of interrupted silkworm-gut sutures was employed to unite the skin and subcutaneous fat. Subsequent to January, 1897, the peritoneum and recti muscles were united with continuous catgut sutures, and the aponeurosis of the transverse muscles was united with a modified mattress suture (Fig. I) after the method detailed in the paper entitled "A New Method of Suturing the Abdominal Wound in Celiotomy."[2]

The results which were obtained by these methods were carefully recorded and reported to the American Gynecological Society at its meeting in Boston, in 1898.[3] The report embraced 472 cases, of which 10 suppurated, or two per cent. There were two post-operation hernias — one in the cases which suppurated, or 10 per cent., and one in the 462 cases in which primary union was obtained, or one-fifth of one per cent.

The results obtained by these methods both from the standpoint of the avoidance of hernia and from that of wound suppuration were eminently satisfactory. Silkworm gut as a buried permanent suture is undoubtedly an admirable suture material, provided it is aseptic and placed in an aseptic wound. This conclusion is not the result of a few experiments conducted over a limited period of time, but of ample experience extending over a number of years. I am quite aware that it has been controverted by other reporters, and that it is the current belief that perhaps 10 per cent. of buried silkworm-gut sutures will either immediately or remotely give rise to suppuration and require removal. In contradistinction to this received opinion, it can be stated, that of the thousands of sutures buried in the foregoing series of cases, in not a single case has a single suture ever required removal, provided the wound healed by primary union, and that the number of cases to which these buried sutures required removal was limited to 10 in which suppuration of the wound took place immediately after operation. I think it well to emphasize this point for future reference.

I would call attention to the following points as requisite to obtain satisfactory results with the use of silkworm gut as a buried suture: (1) That rigid asepsis be maintained in all the details of the operation, especially as to the hands of the operator and his assistants; (2) that light weight silkworm gut be employed; (3) that the sutures be tied without tension; (4) that the knot be made with three ties and then the ends cut off short, so that as small a foreign body shall be left for encapsulation as is feasible.

My confidence in the value of silkworm gut as a permanent suture is such, that although it is no longer employed in my routine abdominal work, it is still used to meet certain conditions. In all nephrorrhaphies three silkworm-gut sutures are used to fasten the kidney to the muscles of the loin. In all inguinal hernia operations at least one silkworm-gut mattress suture is used to close the internal ring of the inguinal canal; and in all femoral hernia operations the hernial opening under Poupart's ligament is closed with buried silkworm gut. In none of the hernia operations has

[1] Read before the Obstetrical Society of Boston, November 21, 1899.

[2] American Journal of Obstetrics, vol. xxxv, No. 4, 1897.

[3] Shall Absorbable or Non-absorbable Ligatures and Sutures be Employed, etc. Medical News, October 15, 1898; Transactions American Gynecological Society, 1898.

suppuration occurred, and in but a single nephrorrhaphy, of the date, March, 1896.

There are two legitimate objections which can be urged against the employment of silkworm gut as a buried permanent suture: (1) The use of interrupted sutures in closing wounds by the tier method requires a longer time than that of the continuous suture; (2) in the course of time pressure atrophy caused by the inclusion of tissue in the grasp of the suture may possibly lessen the strength of the abdominal wall. Neither of these objections is of a radical nature, but they had some effect in influencing me in at least temporarily abandoning the routine use of silkworm gut.

In May, 1898, I adopted the use of catgut exclusively for the closure of the abdominal wound, and since that date celiotomy wounds have been closed in the following manner: (1) The peritoneum is closed with fine cumol catgut (Fig. II); (2) the aponeurotic sheath of one rectus muscle (the right) is then separated from the muscle by blunt dissection, thus baring the under surface of the aponeurosis. The upper surface of the aponeurotic sheath of the left rectus muscle is then dissected clear of fat with a knife, with the object of suturing the under surface of the right aponeurosis upon the upper surface of the opposite aponeurosis. The suturing is then begun by passing the needle armed with medium chromicized catgut (sterilized by the cumol method) through the aponeurosis of the rectus muscle of the left side of the wound, and thereafter by continuous suture closing the rectus muscle until the opposite end of the wound is reached. The needle is then brought from below upward, through the aponeurosis upon the left side of the wound. The aponeurotic layer is then closed by passing the needle from below upwards through the aponeurosis upon the right side; then passing it through the aponeurosis of the left side as in the Lembert intestinal suture; and again from below upward through the aponeurosis of the right side, and so on till the end of the wound is reached, when a single knot completes the closure of the muscles and fascia (Fig. III).

The subcutaneous fat is then closed with a continuous catgut suture in one or more layers, using fine catgut. The skin is next closed by the intracuticular stitch with fine catgut.

In carrying out the technique scrupulous care is given to the following points: All bleeding vessels are controlled either by forci-pressure or catgut ligature; the wound is washed repeatedly with salt solution as layer after layer is closed, with the purpose of removing blood clots if present, and with the further object of washing away in part or in whole any germs which may have found lodgment in the wound; care is taken to avoid tension in drawing upon the sutures, so as not to interfere with the circulation. I was never able to appreciate the logic of those advocating the so-called dry method in dealing with wounds. By this method it always seemed to me that if the wound were infected, the more it was rubbed with dry gauze, the more thoroughly the infecting germs were rubbed into the tissues, and the greater the chances of subsequent inflammation and suppuration. The reverse of this is true when wounds are carefully and freely washed with salt solution.

FIG. I. Closure of the aponeurosis with the modified mattress suture.

Before giving the results which have been obtained by this method of closing the abdominal wound, it will be well to discuss a few points which are directly connected with these results. The abdominal wall is prepared by giving the patient a warm tub bath on the two days previous to the operation, care being taken to wash well the abdominal wall with soap and water.

When there are special reasons for extra cleansing, such as the recent use of mustard plasters or liniments, additional washings are employed and the

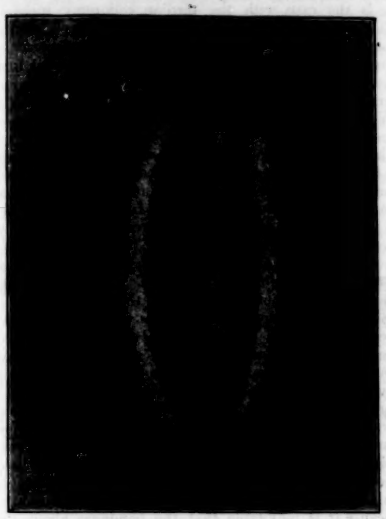


FIG. II. Showing (a) closure of the peritoneum with continuous catgut suture; (b) the borders of the (divided) rectus muscle; (c) the left aponeurosis freed from the layer of fat; the right aponeurosis separated from the rectus muscle and reflected.

scrubbing brush is used. On the morning of the operation, after a full bath, the abdomen is scrubbed with soap and water, the pubic hair is shaved, and the abdominal wall is then carefully cleansed with ether, alcohol and bichloride solution. A towel saturated in bichloride solution, 1–2,000, is applied over the region of operation and held in place by a bandage. When the patient is upon the operating table, the field of operation is again cleaned with ether, alcohol and bichloride solution. After the conclusion of the operation, the abdominal wall is again washed with bichloride solution and a number of layers of gauze rung out of bichloride solution, 1–2,000, is applied in its moist state over the wound; cotton is applied over this, and the dressing is held in place with sticking plaster, which dressing is not disturbed for a week. This method has been employed for ten years, and has given such uniformly satisfactory results that its details have never been varied. The adhesive plasters are used solely with the purpose of keeping the dressing in place and not to support the abdominal wound. When long adhesive plasters are used, they are very uncomfortable for the patient, especially if the abdomen becomes much distended with gas. The chief function of the adhesive plaster is to keep the wound covered with the dressing. I am satisfied that many wounds are infected and suppurate because of the neglect of this precaution. The wound is dressed for the first time from the sixth to the eighth day. The fine catgut employed to close the skin has usually been absorbed by this time, so that the dressing consists in picking off the knots and applying a fresh dressing.

One of the most important details in securing asepsis is the method employed in sterilizing the hands. It is universally agreed that in an absolute sense this is impossible, but with a proper technique this can be approximated. The permanganate of potash — oxalic-acid method of disinfection has been employed in the hospital of which I have charge for the past fourteen years, and constantly during the ten years of which I have had charge. The method in use is as follows: Operations are done in the morning, before either the operator or his assistants have soiled their hands. This is perhaps the most important individual point in the technique. Fifteen minutes is the time limit for scrubbing and disinfecting the hands. Green soap and a stiff brush are employed for about seven minutes, then the subungual spaces are cleaned with a sterilized wooden cleaner. The hands are again scrubbed with green soap and a brush, and are rinsed free from soap. The hands are then washed in alcohol, using gauze to scrub about the finger ends. To wash off the alcohol they are immersed in bichloride solution, 1–1,000, then in saturated oxalic-acid solution, and finally in saturated permanganate-of-potash solution. This process is then reversed. If the hands are put directly from the alcohol bath into the permanganate-of-potash solution, a reaction takes place, resulting in a sticky deposit upon the hands, which it is difficult to remove. The hands are now washed in

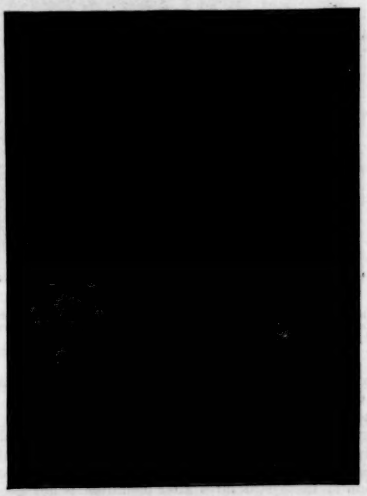


FIG. III. Showing (a) the wound in the rectus closed with continuous catgut suture; (b) closure of the aponeurosis by superimposing the right aponeurosis upon the left and suturing it with special form of continuous catgut suture.

sterilized lime water, and then in sterilized water. For the past year, after this has been done, rubber gloves, which have been boiled for fifteen minutes,

are put on. This method gives approximately perfect results, so far as wound infection is concerned.

The methods employed in the performance of the Alexander operation are very similar to those used in dealing with the ordinary celiotomy wound. March 2d of the current year I reported my experience with this operation before the Philadelphia Obstetrical Society.[4] At this time 62 operations had been performed. Since that date there have been six additional cases, making a total of 68. The teachings of Edebohls have influenced me largely in this operation, corrected of course by the results of my own experience. So far as their influence upon the healing of wounds is concerned, I think it only necessary to emphasize the following points: All hemorrhage is

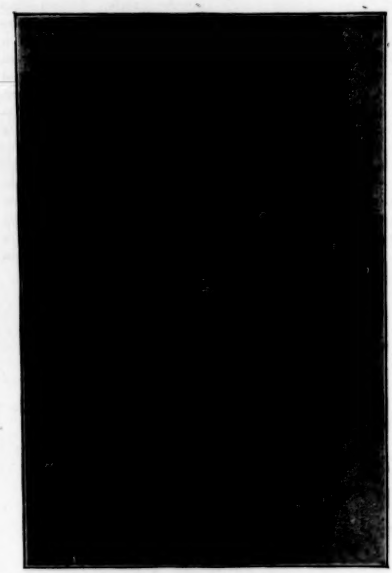


FIG. IV. Showing (a) suturing of the internal oblique and round ligament to Poupart's ligament; (b) the aponeurosis of the external oblique reflected and ready for suturing.

arrested either by forci-pressure or catgut ligature, so that there is no opportunity for the collection of blood in the wound after its closure. Special care is exercised not to draw the sutures too tight, especially those which embrace the ligamentous structures of the abdominal wall and the round ligament. The circulation in these structures after operation is not good, and tightly-placed sutures would necessarily result in strangulation and probably in suppuration.

It is not my purpose to go into details concerning the technique of Alexander's operation. Any one interested in this is referred to the above paper. In general I have followed the technique laid down by Edebohls, with the exception that instead of merely approximating the divided edges of the aponeurosis of the external oblique, that one layer of the aponeurosis is superimposed upon the other and there sutured, as is the case with the median celiotomy incision. The Edebohls technique after the drawing out of the round ligaments consists essentially in the performance of a Bassini hernia operation, the round ligaments being embraced in the sutures which unite the internal oblique muscles to Poupart's ligaments (Fig. IV). This, I believe, is the reason for the absence of post-operative hernias when this technique is employed. This sequel has been entirely absent in my own cases.

Suppuration has occurred in but one of the above series of Alexander operations, and in this case it was limited to the subcutaneous fat. Infection took place in this case, I am satisfied, through the efforts at cleansing the vulvar region after the performance of the Alexander operation, preliminary to the repair of a complete tear of the perineum. It is frequently stated that the pubic region and the groin are especially prone to suppuration. This experience and the fact that in none of my operations for inguinal or femoral hernia has suppuration occurred make me confident that suppuration is not due to the region involved, but to faulty technique on the part of the surgeon, or what is more usually the case, the failure to apply a fixed dressing. This is a point of such importance as to be worthy of emphasis. The double spica bandage which is commonly employed by surgeons to retain the dressings in place is objectionable unless removed after twenty-four or forty-eight hours, because it is inevitable that the bandages about the inner surfaces of the thighs will become soiled when the bladder and bowels are evacuated. For the Alexander operation the same dressing is used that is employed for the median celiotomy wound, with the exception that in addition to the transverse adhesive straps, others are placed around the inner surface of the thighs, then from within outward, and below upward across the lower portion of the abdominal dressing, the outer end of the straps being applied to the posterior surface of the pelvis. These straps keep the dressing from slipping up and exposing the lower ends of the pubic wounds. The nurse has instructions to watch these straps and the dressing. If the straps become loosened, fresh ones are applied, and if the dressing is soiled, the wound is immediately freshly dressed.

From May 28, 1898, to October 10, 1899, 224 celiotomies and Alexander operations have been performed in which the tier method of suturing the wound was employed. In this series of cases catgut only was used. Herniotomies have not been included in this list, and operations in which through-and-through sutures have been employed have been excluded. Two celiotomy wounds and one Alexander operation wound suppurated, or 1.3 per cent. In addition, there was a failure of union at a small point in the skin in three cases. In one patient, a fat woman, the wound was torn open through the fatty layer by the patient turning on her side. The edges of the wound were brought together by adhesive plaster, and healing occurred without suppuration. In one patient, during a violent fit of vomiting on the fourth day, the wound burst open, allowing the escape of several feet of intestine. The intestine was washed off, the wound reclosed, and healing by primary union was obtained.

[4] Alexander's Operation, American Gynecological and Obstetrical Journal, May, 1899.

In one case a post-operative intraperitoneal abscess discharged through the abdominal wound some weeks after operation. In two cases of tubercular peritonitis primary union was obtained, but the chromicized catgut suture caused suppuration about six weeks after operation, and was subsequently discharged. One case of hernia is known to have occurred in the above series of cases, and in a second case a hernia has appeared about an inch above the incision. The case of this hernia is a long-standing diastasis of the recti muscles following pregnancy.

In comparing the results secured with buried silkworm gut as contrasted with the exclusive use of catgut, the record is perhaps rather in favor of the silkworm gut, although the discrepancy is not great. The very distressing accident of the eventration of the intestines on the fourth day would not have occurred had silkworm gut been used as a buried suture, nor do I believe it will often occur with the present method of suturing. The patient was one having an especially vigorous muscular system to produce the powerful intra-abdominal pressure which burst open the wound, and the probabilities are that the continuous suture which closed the rectus muscle was cut by the needle when closing the aponeurotic layer — an accident which might well happen. This is the only accident of the kind which has happened in my experience, no matter what method of suturing was employed.

Delayed suppuration in two patients who were operated upon for tubercular peritonitis is interesting as showing that the process of encapsulation, or the gradual process of absorption of chromicized catgut, does not take place so readily in persons of reduced vitality. In these two patients the catgut acted as a foreign body and produced suppuration, presumably without infection, as suppuration did not take place until at least six weeks after operation. I feel quite satisfied that it is much easier for the tissues to encapsulate a fine silkworm-gut suture than it is to absorb a medium-sized chromicized catgut suture.

The foregoing report warrants the conclusion that in celiotomy wounds which can be closed without drainage suppuration can be reduced to two per cent. or less, and that post-operative ventral hernia can be reduced to a fraction of one per cent.

As the paper has been very discursive, I would suggest the following points for discussion: (1) The histological basis of the various methods of suturing wounds of the abdominal wall; (2) the relative advantages of different suture materials; (3) the relative advantages of different methods of closing wounds of the abdominal wall; (4) methods of suturing in Alexander's operation; (5) sterilization of the hands; (6) the use of rubber gloves as a preventive of wound infection.

In conclusion, it is only left for me to express my appreciation of the honor you have conferred upon me in inviting me to address your Society this evening, and to thank you for your attention.

Women Medical Students in Paris. — There are, according to the *Medical Press*, 129 female medical students at Paris, of whom 91 are Russians, 29 French, five Roumanians, two Germans, one Swiss, and one British. In Paris, women are placed absolutely on the same footing as men.

ABSTRACT OF PAPER ON "FURTHER EXPERIENCE WITH THE OPERATIVE TREATMENT OF ANTEFLEXION."[1]

BY W. L. BURRAGE, M.D., BOSTON.

Two years ago the writer read before the Obstetrical Society a paper on "Division of the Uterosacral Ligaments and Suspensio Uteri for Immobile Retroposition with Anteflexion," in which he reported nine cases treated by curetting, division of the uterosacral ligaments through an abdominal incision and suspensio uteri.

In the present paper he reviews his private notes of all operations performed for anteflexion, 92 cases, analyzes the remote results and announces his conclusions.

Retroposition with anteflexion is defined anew. It is a uterus situated as a whole in the back of the pelvis, that is to say, close to the sacrum, and flexed forward, the flexure being in the body of the organ, in the neck, or in both. The tissues of the uterus at the angle of flexure may be so firm, so altered in consistency by disease that the uterus cannot be straightened (pathological anteflexion), or they may be soft and more nearly normal, and in this case the uterus may be restored to its natural form (congenital or, more properly, puerile anteflexion). A condition of anteflexion is normally found in the little girl, but it is not present in the fetus, therefore we should speak of puerile rather than congenital anteflexion. The uterus which is anteflexed is generally retroposited also and its mobility limited. Shortening of the uterosacral ligaments has been heretofore too generally overlooked by writers on this subject. An anteflexed uterus held in the back of the pelvis close to the wall of the sacrum cannot be straightened because there is no room for the backward excursion of the cervix. The posterior attachments of the uterus limiting its mobility must first be divided.

Anteflexion would seem to be a persistence of a puerile status due to arrest of development coupled with inflammatory action in the uterosacral ligaments and uterine tissues. The source of the inflammation is not clear. Uterine discharges dammed up at the internal os by the flexure at that point and forced through the tubes into the peritoneal cavity, and the passage of hardened fecal masses through the rectum between the uterosacral ligaments, have been suggested as causes. An increase of intra-abdominal pressure from tight lacing or from a chronic accumulation of gas in the intestines, and acting on the posterior face of the body of the uterus, undoubtedly contributes to the formation of anteflexion in certain cases.

The uterosacral ligaments are described in the anatomies as consisting of muscular and cellular tissue and folds of peritoneum. They extend from the pelvic wall near the second piece of the sacrum on either side, and come together on the posterior surface of the uterus at about the level of the internal os in the form of a V. In testing the size and strength of these ligaments in the class of cases under discussion by the bimanual touch and in dividing them, both through an abdominal incision and through a vaginal incision in the cul-de-sac, it is often astonishing to find them so thick and their structure so tough and unyielding. They are ligaments indeed, and it is plain why ventral

[1] Read before the Obstetrical Society of Boston, November 21, 1890.

suspension of the uterus is a failure where these shortened ligaments are ignored. No artificial ligamentous attachment of the uterus to the anterior abdominal wall can hope to equal the pull of these strong posterior guys.

Traces of past inflammatory action in Douglas's cul-de-sac may be observed in some patients in the form of wrinkling and thickening of the peritoneum over and about the ligaments, and in an irregular course of the ligaments.

Retroposition with anteflexion is a common disease in the experience of the writer, 10 per cent. of all of his private cases having been so diagnosed. B. S. Schultze has described this as occurring frequently. It most commonly causes distressing symptoms in young women under thirty years of age, and they suffer from dysmenorrhea, scanty and irregular menstruation and an upsetting of the balance of the nervous system, together with a certain amount of deterioration of the general health. Palliative treatment with drugs and with local measures for depletion of the uterine organs should be given a trial. Stem pessaries are dangerous and other pessaries are useless. Local treatment over a prolonged period of time is not to be counselled in a majority of young unmarried women.

The 92 cases are analyzed with reference to a straightening of the flexure in the uterus, which was marked in every instance, and as regards the curing of dysmenorrhea, the common symptom.

Thirty-six cases treated by curetting and by massage to the shortened uterosacral ligaments where necessary: Twelve of the 20 cases heard from were relieved of dysmenorrhea as a result of the operation, and eight were not relieved. Most of these cases were treated by thorough dilatation and curetting and irrigation of the uterine cavity with salt solution, then drying with gauze and swabbing with pure carbolic acid. It was not noted that the uterus was permanently straightened in any case, although in most instances a previously tight canal remained patulous several months after the operation.

Six cases curetted and massaged and an Alexander operation done at the same sitting: In two the results were unknown. In the remaining four the uterus was straight or very slightly flexed. The dysmenorrhea was relieved in three, unrelieved in one.

Twelve cases of curetting and division of the shortened uterosacral ligaments through an incision in the vagina (colpotomy): Results unknown in four; uterus straight in four; relieved of dysmenorrhea, three; unrelieved, five.

Four cases of curetting and cutting the uterosacral ligaments by colpotomy and an Alexander operation: Results unknown in two, the other two were relieved. One of the latter became pregnant and the other had an anteflexed uterus two years after.

Six cases of curetting and E. C. Dudley's operation on the cervix: Uterus straight in five, flexed in one; three relieved, two not relieved, and had subsequent abdominal operations with relief. The sixth case had fungous endometritis and complained only of menorrhagia. The uterosacral ligaments were not appreciably shortened in these six cases.

One case of curetting and amputation of the cervix and one case of curetting, Dudley's operation and division of the uterosacral ligaments through the abdominal incision and suspensio uteri are too recent to give results. One case of evacuation of a pelvic abscess behind an acutely anteflexed uterus was of interest, because when the abscess cavity had closed the uterus was perfectly straight.

Three cases of curetting and removal of both tubes and ovaries for extensive disease, followed by suspensio uteri after cutting the uterosacral ligaments: Uterus flexed in all.

Twenty-two cases of curetting, division of the uterosacral ligaments through the abdominal wound and suspensio uteri: Immediate results show uterus perfectly straight in six, slightly flexed in 13, and three still in hospital; remote results in 13, uterus straight in four, slightly flexed in six, and sharply flexed in three; dysmenorrhea relieved in nine.

As a result of his experience in the operative treatment of anteflexion the writer lays down the following rules for his guidance in these cases:

(1) In anteflexion without ovarian or tubal disease, and free from shortened uterosacral ligaments or posterior adhesions, dilatation, curetting and Dudley's operation or amputation of the cervix, with a preference for the former.

(2) In anteflexion with retroposition and shortened uterosacral ligaments or posterior adhesions, and without ovarian or tubal disease, dilatation, curetting and division of the uterosacral ligaments or adhesions by colpotomy and Dudley's operation or amputation of the cervix, with a preference for the former. Amputation of the cervix is a useful operation where the cervix is very long and also where there is extensive erosion of the crown of the cervix. In married women in both of the foregoing classes dilatation and curetting without other operation are sufficient, because pregnancy will usually straighten the uterus and stretch the ligaments and adhesions. Should pregnancy not supervene within a number of months, and should the symptoms persist, another curetting and Dudley's operation, with or without division of the ligaments, may be done.

(3) In anteflexion, with or without retroposition, having ovarian or tubal disease, dilatation, curetting, Dudley's operation, and suspensio uteri, the uterosacral ligaments being divided through the abdominal wound if they are shortened and whatever may be necessary done to the ovaries and tubes.

THE GASTRO-INTESTINAL TRACT IN NERVOUS DISEASE.

BY F. SAVARY PEARCE, M.D.,

Instructor in Physical Diagnosis, University of Pennsylvania; Physician to the Medical Dispensary, St. Agnes' Hospital, Philadelphia.

THE intimate relation between the central nervous system, organs, and functions of the body especially, cannot be too forcibly emphasized. Stress is to be laid upon the oblivion existing through the inexact knowledge of the anatomic relation between the cerebro spinal, or system of animal life, so-called, and the ganglia sympathetica, or system of organic life, as we know it to be, and especially the inexact understanding of the anatomy of these most delicate ganglia and nerve fibres and of their intricate inosculations; that is, of the sympathetic fibres about the important organs of the body. Recent anatomical and physiological experimentation, now being pursued through the aid of vivi-

section, is proving more and more the wonderful rôle played by the "abdominal brain," as some anatomists have dignified the ganglia of this to be. Bearing in mind the wonderful controlling influence of the sympathetic nervous system, as shown by the preservation of life under profound anesthesia, the justice of styling these ganglia subconscious brains is the more appreciated; and the wonderful influences even then of its reflexes upon important centres, as respiration, the writer has recently had demonstrated to him in a male, aged thirty years, whom he had operated on for fissure *in ano*. While under profound etherization the respirations could be controlled (inhibited) by wide dilatation of the sigmoid flexure by means of a long bivalve speculum. Perhaps one great reason why the sympathetic system has not been given enough import in practical medicine and therapeutics is because morbid conditions of the same, as in health, do not give rise to any painful sensation, and, therefore, when pain *does* occur it is directly of cerebrospinal origin. We very often, therefore, fail to seek the real reflex primogenesis of morbid states presenting symptoms for relief. In another place [1] we have emphasized the importance of considering the sympathetic system's influence in the causation of neurasthenia through disturbance of the reproductive organs — a subject that has been widely discussed and must be accepted as proven. While similarly, of course, co-relation of the great laboratory of the body through the sympathetic to the cerebrospinal axis, both physiologically and pathologically, needs no scientific advocate to further establish it, yet specific cases bearing upon gastro-intestinal disorders and nervous disease may prove of some value for obtaining a more widespread recognition and a proper therapeusis of the less manifest diseases of the nervous system which still *do* have the same pathogenesis. Admitting the difficulty of ascertaining cause or effect frequently, even where there is evident co-relation between nervous disease and gastro-intestional disorders, the point we wish to consider *especially* is to determine *how many* cases are relieved by *treatment* of the primary or secondary gastro-intestinal state; and more scientifically to seek out given cases of nervous disease greatly aggravated by the intestinal trouble, or, indeed, entirely caused by it. This leads back to the broad study of heredity and conditions of environment, and much clinical experience. In a paper with Dr. Wharton Sinkler, on "Family Diseases," [2] we drew conclusions that heredity could be considered from a statistical review of a large number of cases (16,500) as one or more in 80; although, if the most accurate history of our cases could be obtained, much higher.

Savill (1899), in his recent monograph on "Neurasthenia," adds zest to investigation of these allied nervous states of the human body.

Impetus in the study of aberrations of kidney excretion — not an index of renal disease, however — was first given the writer through making the urinalyses in a large number of cases of nervous diseases in the practices of Drs. S. Weir Mitchell and John K. Mitchell. The results of uric-acid findings have been published, and while indican is tested for in almost all cases we have not up to this time made careful analysis of its possible import in nervous disease.

[1] Neurasthenia: Its Co-relation with Pathology of the Female Organs, with H. D. Reyea, M.D., Annals of Gynecology and Pediatry, September, 1898.

[2] Journal of the American Medical Association, February 10, 1900.

The whole subject of irritation and auto-intoxication, *per se*, as causal factors of disease of the nervous system is most intricate in its exact determination for the therapeutic point of view, which is our *most to be desired* knowledge. For instance, in a case of large ovarian tumor, as reported by Beyea [3] recently, to my mind, the glycosuria was due to irritation of the glycogenic centre in turn *preventing* metabolism. The diabetes here disappeared after removal of the tumor.

FOURTEEN DETAILED CASES AS BASIS OF THIS STUDY.

Case I. M. B., female, age twenty-two years; married, one child living; no miscarriages; reported March 19, 1898, suffering with what she styled splitting headaches for about three months, worse toward evening and the dark hours. The headaches had begun with constipation, which, when first seen, was very troublesome. She suffered from anorexia, insomnia and exhaustion, tongue was slimy, coated and flabby, tooth indented, pulse 120 per minute, heart weak, no murmur. We could find no ocular or aural cause for the head symptoms. She was placed on a liquid diet, given blue mass, gr. v, at bedtime for several days, and tonic of tr. nucis vomicæ and soda bicarb. before meals, and semi-rest treatment was enjoined. Improvement followed immediately. At the end of two months she considered herself a well woman, having no head symptoms, and the bowels remaining in normal condition.

Case II. J. J., reported April 2, 1898; male, age fifty-three years, shoemaker, alcoholic, — following exposure awoke with pain in arms and down left leg, accompanied by numbness in left side of the body. He never had had acute rheumatism. With the incipiency of the pain described he had had an attack of gastritis, followed by lienteric alvine dejections of the gastric fermentation. Antiseptic treatment to the intestinal tract dissipated the pain and subjective numbness within twenty-four hours. Although this patient complained of dulness of vision for a week after the attack, to our mind the case presented a complex of alcoholic depression, to which was added intoxication from ptomaine poisoning. In the history it was ascertained that the amount of alcohol he had taken previous to this attack had produced little or no impression on the nervous system. The peculiarity in this case was the objective and subjective coldness of the left arm, leg and entire left side of trunk, probably showing disturbance of the caloric centres unilateral in the higher nervous system. At the end of two months the man seemed back to normal health in all ways — perhaps some of hemichoreic movements may be excited by the unstable neurons later in the case.

Case III. R. I., reported May 28, 1898; female, age forty years; Hebrew; five children living, three dead; complained of *dull vertex headache*, periodic about once in three months, lasting several days, accompanied by insomnia; no rheumatism; no other pains complained of; bowels said to be regular; urine high-colored, *contained indican in excess;* appetite fitful. She is a plethoric woman, heart is feeble; however, no organic lesions can be found excepting great relaxation of the abdomen and dilatation of the intestinal tract and fermenting contents. The use of magnesium sulphate to thorough cleansing of the intestinal tract, with occasional use of acetanilid, caffeine and camphor monobromate as a nerve depressant, together with massage of the abdomen and restricted diet, and occasionally high flushings of the colon with lime-water solution, produced immediate permanent improvement.

Case IV. M. G., reported July 2, 1898; female, age thirty-five years; single; complains of general nervousness and nerve tire, easily exhausted, with considerable vertical headache, growing worse toward evening; suffered from indigestion; eructations of sour stomach contents; bowels are moved daily, although there is constant feeling of tightness through the abdominal content, with distention. This woman's diet was cut down to liquids largely, and nux and

[3] College of Physicians of Philadelphia, Section on Medicine, December, 1899.

soda mixture was given before meals, with very rapid relief of general nervous state and headache. Five-drop doses of strong acid nitrohydrochlor. were continued for one month.

CASE V. J. S., reported August 6, 1898; male, age twenty-nine years; no history of nervous disease in family; complains of pain in head in occipital region, lasting one week, *completely incapacitating* him for work. There is no history of specific disease; kidneys are normal, his physique being powerful; gave a history of extreme constipation for some months, and was a great meat eater. The only pathological state of the urine was of excessive indican. He was put on restricted diet and given sodium salicylate, gr. x., t. i. d. Within a month this man got perfectly well of the toxemic headache, considered to be due to potomaine intoxication aggravated by excessive proteid diet.

CASE VI. C. K., reported December 3, 1898; female, age thirty-nine years; married, eleven children, six living, others died of marasmus. Patient complains of frontal headache for the past two weeks, which comes on in the morning and disappears in the afternoon; also complains of vague pains in extremities and of *general nervousness*. Headaches begin about 9 A. M. and last to 4 P. M. Correcting a hyperacidity of the stomach with mild daily catharsis very much relieved her condition at the end of four weeks — that is, the headaches did not last so long, but seemed quite as severe in their several hours' duration. This woman seemed entirely well two months after beginning treatment. During the summnr of 1898 she relapsed into the same condition of intestinal indigestion, with *indicanuria*, to again be entirely relieved in the fall by a mixture of charcoal, gentian and sodium bromide. Again, having had a relapse, living as she does in poor hygienic surroundings, each time has been relieved by intestinal antiseptics. It should be said there were no other causes to be found; menstruation was normal, and the eyes presented no error of refraction.

CASE VII. N. D., reported March 25, 1899; widow, age thirty years; two children, living and well; no miscarriages; has been very constipated for some weeks; her head began to distress her much across the frontal region, beginning several weeks before reporting for treatment. *Pain is of dull nature*, gradually growing worse toward evening. This patient was much improved by the use of bromide and gentian, and after full correction of intestinal torpidity the headaches entirely disappeared. I take it that the absorption of ptomaines from the intestinal tract, and of the improperly eliminated metabolites of the system passing through the sensitive dura mater were the exciting cause of the cephalic distress (lymphostasis).

CASE VIII. M. P., reported April 11, 1899; female, age sixty-five years; complaining of pain in the lower lumbar region and general feeling of tire, accompanied by violent wind dyspepsia, and labelled "disturbed metabolism." Under the use of gentian, nux and soda mixture, with the limitation of diet to milk and proteids, and with the stimulating effect of the static current down the spine, she was entirely relieved in two and a half months of the general toxemic state. The association of dyspepsia and rheumatism seem to be proven in such a hybrid case as this one. We have no doubt that many cases of rheumatism are precipitated by catching cold, since the retention theory of the genesis of a "cold" would tend to show the disturbance of metabolism acting through the nervous system, and would be sufficient cause for the rheumatic state. Some form of organism *may* be the determining factor of acute rheumatic fever, and may also be a potent cause. Certainly the subject of rheumatism is still in a state of theoretic speculation. Nervous origin is, undoubtedly, a large basic cause in this disease so closely allied to the conditions of waste product pains of disturbed metabolism; for the nervous system must control the proper absorption and elimination of leucomaines, etc, in health and disease.

CASE IX. L. L. (private), reported May 11, 1898; female, age thirty-five years; for three years has been suffering from excessive nervousness associated with extreme constipation, bloating of the stomach and wind dyspepsia; *urine contained a large amount of indican;* her sleep was much disturbed with vague distress in the head, much aggravated when bowels were not relieved by cathartics. Use of bromide of soda in moderate doses, with trional as an hypnotic, much improved her "general nervousness." But it was not until full relief of the gastro-intestinal condition, after several months in treatment by means of regulated diet, massage to the abdomen, special as well as general, and the use of salol as an intestinal antiseptic, that she began to gain flesh and lose permanently the general nervous condition she had been in so long. The difficulty in such a case as this is to trace the *post hoc* in the vicious circle undoubtedly set up; and yet we feel that, clinically, restoration of health was largely influenced by correcting the function of the digestive tract.

CASE X. F. S., reported to the Howard Hospital service of Dr. J. Madison Taylor, July 14, 1897; female, age seventeen years, single; came to us at the nervous clinic, having been referred from the medical clinic on account of what was diagnosed as toxemic headaches, the ordinary methods of relief having failed. As the girl came into the room she gave a peculiar sigh, due to a forced inspiration, and fell on a chair unconscious, frothing at the mouth, in clonic and then tonic spasm of the entire musculature. She was profoundly unconscious, and pallid in the attack, and was dazed for half an hour after recovery. It was then learned she had five of these seizures within a year. She was particularly waxy in appearance, and there was acne over the forehead and nose. She complained pretty constantly of frontal headaches, was extremely constipated, and suffered much from epigastric distress, although the trio of signs of epigastric ulcer were eliminated. The girl complained of tenesmus and general abdominal distress, much increased at the time of attempted defecation. The skin eruption seemed to be aggravated, and to spread in a more generalized hyperemia about ten o'clock in the mornings, increasing to acne about three o'clock, when small white vesicles came out over the face and neck, this more acute syndrome of epidermic disorder again abating toward night. The patient was first put on a tonic, and the case studied carefully from day to day. It was soon found she complained of general muscular soreness without any real rheumatism. We now put her on small doses of potassium iodide and sodium salicylate, and began to pay special attention to the bowel condition, as examination of the urine revealed large quantities of indican present. High enemas were resorted to, by the use of the long rectal tube, adding glycerine to the alkaline solution of soap. It was four months before any approaching normality of the intestinal tract was obtained, and with it the appetite improved, persistent acne was bettered, while the transient erythroderma had entirely disappeared. The patient was now put upon iron in moderate doses (Blaud's pill, gr. v, t. i. d.), and the various laxatives used, as the great torpidity required frequent changes of cathartics to produce any effective results. It should be said no stricture of the lower intestine could be made out. While the girl complained constantly of stomach distress, since the headaches were better and no eye lesions or other cause having been found for them, we felt we were on the right track. During the following year the patient had but one epileptic seizure; the blood count ran up from the original anemic condition of 3,200,000 red blood corpuscles to 4,800,000 red blood corpuscles, and while iron could not be taken for many weeks at a time, the ability to digest food through the use of caroid and other digestants favored hemogenesis. The patient has had *no epileptic seizure for twenty-two months*, and seems at the present writing to be about well, so much so that she was married on December 13, 1899. The urine analysis *failed to detect indican* at the present time, and the gastro-intestinal function is entirely normal.

CASE XI. A. L., single, age fifty-two years, always a delicate, refined woman, was sent to me by Dr. Stewart, of Allegheny, January, 1899, suffering from tormenting headaches not of a migraine type, but being constant, dull, and

splitting in character all over the cranium. She has been violently constipated *for twenty years*, but paid little or no attention to it; doing with little food; having generalized swelling of the face, hands, and lips at times in the mornings when she was at her work. The urine was normal save for much indican present. She frequently "threw off" quantities of bile. There is some tenderness over the liver, and gastric irritability, with gastroptosis. She is in extreme neurasthenia. Climacteric established at fifty years of age, but did not seem to influence headaches, constipation, nor her generally poor metabolism. She was placed on high enemas, free use of cascara and abdominal and general massage, occasional lavage, and trophonine as a tissue builder. Improvement was slow but steady. Her eyes were not in any way causative of headaches, being simply presbyopic and fully corrected. After six months she had become very well indeed. I saw her in Allegheny on December 22, 1899, after a two days' headache, apparently precipitated by constipation, with high pulse tension, which by digestants we are with some success treating. The use of molasses in this case will precipitate headaches the next day, I take it, due to fermentation thus set up.

Case XII. C. S., age fifty years, business man in large responsibilities for years, with an original weak constitution, — nervous. Has had gastritis off and on for twenty-five years. Has been treated with great benefit on several occasions by the late Dr. William Pepper and by Dr. Wharton Sinkler, the latter gentleman placing the patient on semi-rest treatment, sulphocarbolate of zinc and the exhilarating effect of hydrotherapeutics at the Infirmary for Nervous Diseases. At this time the total acidity of the stomach was four per cent., and showing slow digestion in the lavage fluid drawn off two and one-quarter hours after a test meal. There was no albumin or glucose in the urine, but an excess of uric-acid crystals. The man also had irritating piles, removed by the surgeon. His bowels became regular, and abdominal distress largely disappeared. He gained much in weight, and after a number of weeks' treatment went back to Ohio immensely improved, May, 1899. While in Ohio, December 24th, I was called to see him; found all signs of returning neurasthenia, gastric atony, and *indicanuria*. He had lost much flesh. Was belching continuously. Attack said to be due to cold. Blistering over stomach was now resorted to, and the toxic condition of the urine treated by salol. The patient has improved some up to date, and indicanuria has disappeared. Undoubtedly in this case auto-intoxication plays a rôle in semeiology.

Case XIII is that of a female, age seventeen years, white, single, suffering one year from atonic dyspepsia and persistent supra-orbital neuralgia for six months. She is of bilious temperament. Cardiac arrhythmia prominent. Gastro-intestinal therapy cured in one month the head pains.

Case XIV. Anna G., German, single, age twenty-six years, reported to my clinic at St. Agnes' Hospital, November 9, 1899, suffering from constipation since sixteen years of age, frontal headache, acne, and lethargy. The latter two symptoms were always worse in the morning, and recovered some from them as she forced herself out of doors or to her work. Is always worse after a hearty meal, when she has a sense of sinking. Bowels are moved daily, but she has a sense of insufficient evacuation always. Stomach is dilated down to the umbilicus. *Indicanuria marked.* Indigestion is always made worse by worry or overwork. If she catches cold the bowels are always made more costive. Boulimia and evidences of slight catarrhal gastritis. She was put on restricted diet, given sodium phosphate one drachm before breakfast, acid nitrohydrochlor. dil. gtt. x. a. c. with a tonic. This girl has very rapidly convalesced from her miserable condition, and is happy in the zest for work.

A sister is undergoing such a therapeutic régime with good effect.

This case shows the *mixed* class we have styled, — that is, when neurasthenia and auto-intoxication exist contemporaneously. The combined neural upbuilding with intestinal antisepsis and hygiene we feel are equally responsible for the great improvement up to date. Such a case as this might be termed one for the neurologist or for the gastrologist, if we look not broadly on the medical horizon.

Conclusions.—From the foregoing clinical study it seems pretty clearly demonstrated to the writer that we have three classes of disease in which the nervous system is more or less intimately influenced by gastro-intestinal disorder and usually of a toxic nature.

(1) (*a*) Neurasthenic states, general or in localized areas of distribution (most common); (*b*) where organic changes are present in the nerve cells (sclerosis). Both of these influences certainly lower resisting power and cause improper distribution of nerve force to the gastro-intestinal tract. This leads to dilatation and perversion of the enteric secretions, thus giving rise to fermentations of the stomach contents, etc., products of which are reabsorbed, further disturbing the metabolism and aggravating the symptoms of neural disorder.

(2) Cases where long-continued gastro-enteritis causes organic change in the mucosa and gastro-intestinal glands, including the liver and pancreas, of course — thus making the primal point of disease an irritating fermentation, with the elaborations of toxins. These, with the hyperacid secretions, especially of the stomach content, are in part absorbed into the system, producing a constant auto-intoxication, as would excessive tobacco or any other poison, — thus intoxicating through the blood the central nervous system until we have finally, in slow process, asthenia set up in the neurons, innervation of the gastro-intestinal tract at that moment being perverted through the efferent, specialized, and trophic nerve twigs.

(3) There must be a mixed class of cases in which neurasthenia, so-called, or organic nervous diseases are associated, *pari passu*, with disorders of digestion of a functional or organic nature. Admitting the difficulty of determining when (1) and (2) exist — even when the cause and effect certainly do maintain — for this reason it seems logical to state that a large number of cases placed in the *third* category belong by right to the preceding *two* subdivisions. The more close histories of our cases we secure, the more exact clinical studies made of symptoms and signs in the individual case, together with careful analyses of the secretions and excretions of the body, thus utilizing the associated import of such phenomena as *indicanuria* for indices, will the better results be obtained in *treatment*. So, also, will such closer observation in the direction noted more surely place the association of neural and somatic diseases out of the less intricate classification we have termed *mixed*. The individual case study as to heredity, diathesis, or temperament, must needs be broadly taken into account. There does seem to be the greatest reason to assume the *acid*, *neutral*, and *alkaline* temperaments, with their predispositions and peculiar immunities, in drawing any conclusions of the case.

An admirable article by Dr. Albert E. Sterne in the *Philadelphia Medical Journal* of December 2, 1899, elaborates this, as it seems to us, very important side of medicine. Nor should we fail to recognize that secretions and excretions are influenced by the emotions, — for example, serous diarrhea produced through emotion or overwork, as shown in the noviti-

ate to the examiner's room, — or application to hard mental labor in a neurasthenic subject. These physiological phenomena are shown in full light by the work of Darwin on "Expression of the Emotions in Man and the Lower Animals," hence the subtle metaphysical influence must be weighed in any case along with the accurate scientific knowledge indicated.

The more we study the sympathetic nervous system, the more clearly will morbid phenomena, such as the association of biliary disease or irritation causing disturbance of menstruation, of serous diarrhea substituting menstruation, or, indeed, vicarious menstruation, be better understood. The fact that pain seldom enters into these disturbances as a prominent factor at least misguides the patient as to interpreting his being ill, and the physician, too, in determining the conditions from the limited objective signs and symptoms alone.

Addendum.—Aside from the subject of intoxication, of course other irritants of a mechanical nature do produce nervous symptoms. I know of a case in charge of a Western physician where chronic eczema was cured by stretching a stricture of the rectum, and another case of epileptic convulsions ceasing after a cure of a rectal fissure which had been long neglected.

A similar case has been recently reported in the *Boston Medical and Surgical Journal*, December, 1899. The writer wishes here to refer also to the *New York Medical Journal* for July 29, 1899, in which he has reported a case of hebephrenia, with all its typical vagaries, undoubtedly due largely to persistent constipation. The girl is perfectly well to-day.

A METHOD OF DETERMINING THE DIGESTIVE POWER OF GASTRIC JUICE, AS WELL AS THE ABSORPTIVE POWER OF THE STOMACH.

BY A. E. AUSTIN, A.M., M.D., BOSTON,
From the Chemical Laboratory of Tufts College Medical School.

IN considering the products of gastric digestion, it is, of course, first necessary to separate them into their constituent parts. First, we have soluble albumin, a substance which never exists except where there is a lack of HCl. Then we have acid albumin, a loose combination of albumin with this acid, and as final or end products, albumose and peptone. It is found, for all practical purposes, unnecessary to separate these two products, since both are equally readily absorbed. Whether there exist, also, anti- and hemi-groups of these latter products is unimportant to the clinical consideration of the subject, for both are precipitated by the same reagents and have all their other properties evidently similar.

To separate these products, it is first necessary, where no free acid is present, to add a drop or two of HCl and heat to boiling. Then sodium carbonate is added, until the acid albumin is completely precipitated. Now, by process of filtration we can readily separate the acid albumin from the albumose peptone. Whether all the native albumin is wholly removed can be readily demonstrated by adding some nitric acid to this filtrate, and warming. If albumose peptone only is present, the precipitate is redissolved. If native albumin is present, the precipitate becomes firmer and more copious. This precaution should never be omitted in testing for albumose peptone. In the quantitative estimation of albumose peptone two methods may be employed: an absolute, known as Kjeldahl's, and an approximate method, which in this article we propose to demonstrate. The Kjeldahl method consists of converting the nitrogen in the albumose to the sulphate of ammonia by means of cooking with strong sulphuric acid, freeing the ammonia by the addition of sodic hydrate, and distilling it into an acid solution of known strength. By back-titration, with an alkaline solution of known strength, we can determine the amount of ammonia, and from this calculate the amount of nitrogen, and also of the albuminous product examined. This process, as can be seen, is extremely cumbersome, and entirely unsuited to clinical methods. It has its value, however, in enabling us to keep a control over all approximate methods, and to determine how far they depart from the absolute. To do this, it is necessary to know the percentage of nitrogen in albumose peptone, of which there exist only a few reports in chemical literature, so that we found it necessary to re-establish this fact from personal observation. Albumin possesses about 16 per cent. of nitrogen, but from the table appended below, it will be seen that the amount of nitrogen from albumose peptone is very much less than this. As an instrument of approximate estimation, the centrifuge was chosen, as its graduated tubes furnish a very good means of comparison between the precipitation and the solution in which it was precipated. As a precipitant, Esbach's solution was first chosen, but proved unsatisfactory from the small amount of precipitate which it produced. On the contrary, phosphotungstic acid, watery solution, 1–20, and HCl were found to give a copious white precipitate, and to precipitate completely the albumose peptone held in solution. The necessity for comparison of the centrifuge method, and the absolute determination by Kjeldahl's method will be evident to all when the following results are compared:

Experiment 1. — Several solutions of Merck's peptone were prepared, varying in amount from .1 gramme in 100 c. c. of water to 1 gramme in 100 c. c. of water. It was found that, in order to keep these in perfect solution, a few drops of alkali were necessary, and

TABLE I.

KJELDAHL.			CENTRIFUGE.	
Strength of Solution. Per cent.	Nitrogen in Grammes. 10 c. c.	Percentage of Nitrogen in Albumose Peptone. Per cent.	Reading of Graduated Tube. 6 c. c.	Calculated per cent.
.1	.00168	11.9	.3	.1
.2	.0028	14.8	.6	.2
.3	.0032	10.7	.9	.3
.4	.0049	12.2	1.2	.4
.5	.0065	13.1	1.5	.5
.6	.0072	12.1	1.8	.6
.7	.0071	10.2	2.1	.7
.8	.0092	11.5	2.4	.8
.9	.0091	10.1	2.7	.9
1	.0116	11.6	3.4	1.1

by means of this, perfect solution was maintained as long as the time requisite for manipulation demanded. Of these solutions, 6 c. c. were now taken in the graduated tube, a few drops of HCl added, and a watery solution of phosphotungstic acid added up to the 10 c. c. mark. The tubes were then placed in

the centrifuge, and rotated rapidly by hand for five minutes, after which the precipitate was found firmly impacted in the bottom of the tube, and its amount in fractions of a cubic centimetre could be easily read. As a control, 10 c. c. of each solution were treated by Kjeldahl's method, and the nitrogen determined and reckoned in percentage of the amount of albumose peptone used. The results of these determinations can be best displayed in the foregoing table, which we will call Table I.

From these determinations with known quantities, we see that the amounts registered by the graduated tube correspond very closely with the known quantities of albumose peptone, and that from these we can very easily devise a method of calculation. If we divide the amount registered by the tube by 300 it will give us the rate per cent. of albumose peptone. For instance, if the tube reads 1.5 c. c. and we divide this by 300 we find that the resulting product is .005, which is, of course, similar to .5 of 1 per cent. Still more briefly, we may divide the reading of the tube by three, considering the result as tenths of 1 per cent. Another point was discovered, that after a concentration of .6 of 1 per cent. is reached, it is more desirable to dilute with an equal amount of water, whereupon, of course, the resulting product must be multiplied by two.

To this lack of dilution, undoubtedly, the excessive result in the last determination can be attributed. From the Kjeldahl estimate, we learn that the amount of nitrogen apparently varies, but this variation is probably only apparent; resulting perhaps, from the imperfect distribution of the albumose peptone in these solutions, and also from error in calculation. This difficulty, of course, could not occur in filtered gastric contents. As an average of these ten estimations, we learn that albumose peptone contains 11.7 per cent. of nitrogen, but for convenience in future work we have adopted 12 per cent. as a ready factor of calculation. The degree of firmness possessed by the centrifuge precipitate depends, of course, upon its speed and the length of time; but as we regard the revolutions of the centrifuge as about 3,000 per minute, which can be readily procured by turning the handle with moderate rapidity, we have 15,000 revolutions as a basis for our reading. With the electric centrifuge, the revolutions can be more readily regulated; this would not present the slightest difficulty.

Experiment 2. — In order to apply these methods to actual gastric contents, we have, of course, to simulate digestion in the stomach as far as possible with our laboratory appliances. The ingredients of gastric juice we possess: HCl, pepsin and water. Heat of the temperature of the body is maintained for a long period with our brood oven. But absorption of digestive product we cannot simulate, nor can we simulate the peristaltic action of the stomach. Apart from these hindrances, which are unavoidable, artificial digestion in the laboratory must produce the same results as natural digestion in the stomach; so that in order to fit our method more accurately, various solutions were prepared which consisted of .1 gramme of pepsin, 100 c.c. of water, and .5 gramme of albumin. The albumin was dried, and in scales. The HCl was present in varying amounts, beginning with 2.5 parts per 1,000, and ending with .25 parts per 1,000. The period of digestion was invariably twenty-four hours. As a control, there was also prepared a digestion with the same elements, except pepsin, and in place of that, a vegetable proteolitic ferment was used, whose digestive power it was desired to test. After the period of digestion was over each of these solutions was tested for the presence of free acid, soluble and acid albumin were removed, the previous volume of 100 c. c. re-established and then 6 c. c. were taken for estimation of albumose peptone in the centrifuge, and 10 c. c. were subjected to the determination of nitrogen by Kjeldahl. In each case, from the amount of nitrogen determined, there was calculated the amount of albumose peptone, using 12 per cent. as the factor. A comparison of these two methods of calculation can be seen in the following table:

TABLE II.

	Pepsin.				Vegetable Digestant.			
Amount of HCl. Per 1,000.	Nitrogen in 10 c. c.	Reading Tube.	Estimated Albumose Peptone. Per cent.	Calculated from Nitrogen. Per cent.	Nitrogen in 10 c. c.	Reading Tube.	Estimated Albumose Peptone. Per cent.	Calculated from Nitrogen. Per cent.
2.5	.00126	.3	.1	.107	0	0	0	0
2.25	Miscar.	.3	.1	0	0	0	0	0
2	.0062	1.5	.5	.51	.0021	.45	.15	.18
1.75	.0044	1.25	.41	.37	.0036	.35	.28	.22
1.5	.0062	1.9	.6	.52	0	.15	.05	0
1.25	.0061	1.75	.58	.51	.0025	.7	.23	.21
1	.0056	1.35	.45	.46	.0030	.8	.26	.25
.75	.0067	1 86	.62	.56	.0032	.85	.28	.27
.5	.0054	1.3	.43	.45	.0023	.53	.17	.19
.25	.0043	1.15	.38	.36	.0026	.46	.15	.21

It is found upon comparison of this table that the percentage of albumose peptone calculated from the nitrogen, which is presumably fairly correct, compares very favorably with the amount which is estimated from the centrifuge precipitation. As the variation is not always in one direction, it is safe to consider that it is due to slight inaccuracies in calculation, and not necessary to the process.

Another noticeable thing about these digestions is, that the strength of HCl is apparently of lesser importance, provided only that all the albumin is saturated and that there is a slight excess. Every digestion except the last shows the presence of free HCl, and a marked difference can be seen between these results of digestion where a solution of .5 per 1,000 and .25 per 1,000 were used, to the great disadvantage of the latter. The presence of free HCl or the amount of free HCl has no significance whatever, beyond the fact that all the albumin present is converted to acid albumin. Hence we can see that the digestive power of gastric juice is dependent upon two factors, pepsin and HCl, and there is no reason why the power of both should not be determined as a whole, and termed the digestive power of gastric juice. In the absence of free acid, we are not yet clear that digestion may not occur, though to a limited extent. This point is now being investigated with favorable results.

Another thing which attracts our attention is the amount of albumose peptone which can be obtained from a stated quantity of native albumin. In these experiments, in our most favorable digestion 92 per cent. of the albumin was converted into albumose peptone. Whether the pepsin, which in every case was

20 per cent. of the albumin, was utilized to its fullest extent, we do not know; probably not. Yet it arouses an interesting discussion with reference to the use of pepsin as a therapeutic agent. At the same ratio, it would require 20 grammes of pepsin to digest the 100 grammes of albumin which are found in the ordinary individual's daily diet, if he is allowed to choose freely. All digestions in the laboratory are very much hindered by the products of their own digestive agent, a restriction which in the stomach is undoubtedly remedied by the constant absorption of these products, and in this case, pepsin would have a much wider range of efficacy than when its powers are so restricted. It is very improbable that albumose peptone alone is poured into the intestines, leaving the less fully digested products in the stomach, and the more reasonable belief is, that it is constantly absorbed during the process of digestion.

Experiment 3. — In order to test the process still further, certain digestions with pancreatin in an alkaline solution of varying strength, namely, from 1 to 5 parts per 1,000, were carried out, and the resulting products estimated. A control digestion in each case was also made with the vegetable enzyme which had been previously compared with the pepsin. The process of separation of the undigested products differed here, of course, from that previously used. It was found necessary to separate the alkaline albumin, plus the soluble albumin, by neutralizing with acetic acid, and to cook it, by which both substances were removed. In other respects, the digestions were exactly alike, the same amount of pancreatin and albumin being used as before. The results of the digestions were tabulated also, and can be seen as follows:

TABLE III.

	Pancreatin.				Vegetable Digestant.			
Strength Na_2CO_3 Per 1,000.	Nitrogen in 10 c. c.	Reading Tube.	Estimated Albumose Peptone. Per cent.	Calculated from Nitrogen. Per cent.	Nitrogen in 10 c. c.	Reading Tube.	Estimated Albumose Peptone. Per cent.	Calculated from Nitrogen. Per cent.
1	.0364	.9	.3	.3	.00224	.65	.21	.19
2	.0017	.35	.11	.14	.0007	.15	.05	.06
3	.0028	.75	.25	.24	.0016	.4	.13	.13
4	.0028	.25	.08	.23	.0021	.28	.09	.17
5	.0016	.4	.13	.14	.0015	.2	.06	.12

The most noticeable thing about this series of estimations is the inefficiency of the pancreatin of trade to digest albumin. If we take, for instance, the most favorable of these digestions, we find that only 42 per cent. of the albumin was converted into albumose peptone, while with the pepsin-HCl digestion, 92 per cent. of the albumin was converted. This leads us to consider seriously the value of pancreatin as a therapeutic agent, especially when we know that apart from its evident inability to convert albumin, we consider also the effect of the HCl upon it in its passage through the stomach. Of course, we are not speaking now of freshly prepared extracts of pancreatin, which have a much greater activity than the dried powder which is commonly used. In fact, it seems from the experience of others, that freshly chopped pancreas in substance has a much more valuable effect when it is desired to influence to duodenal digestion.

From a clinical standpoint, we have now the application of this method to the actual investigation of the power of gastric contents, removed from the stomach, and we must also recognize the fact that the HCl is equally effective, whether existing in a free form, or combined with albumin; so that it seems only necessary to filter out the insoluble food particles, and to use the gastric juice directly for digestive experiments. There is still some question as to the advisability of adding HCl when no free acid is present, but in the following experiment the gastric juice was employed just as it was removed from the stomach after filtration. There may be ample HCl for perfect digestion and still not a particle of it may exist in a free state. Combined HCl has not lost its power, with the aid of pepsin, of converting unchanged albumin to peptone. We may regard the term "digestive power" as the quality which gastric juice possesses of converting albumin to albumose peptone. It is always necessary to have a control which shall contain gastric juice alone, without the addition of albumin.

The process of Hammerschlag[1] is as follows: To add to a 4–1,000 solution of HCl albumin until we have a 1-per-cent. solution of this substance. Of this, measure out two portions of 10 c. c. each. To one add .5 c. c. filtered stomach contents; to the other, 5 c. c. water. Place both portions in a brood oven for one hour, and then estimate the amount of albumin in both by Esbach's albuminometer. The difference represents the amount digested, which can be calculated in percentage. In regard to this method it can only be said that the picric acid which Esbach's solution contained will precipitate albumose peptone as well as acid albumin, and hence the resulting difference is not necessarily due to the amount of albumose peptone formed. Our own applied method, which seems most satisfactory, is as follows: 10 c. c. of filtered gastric contents, either undiluted or diluted according to a definite proportion, are measured out and placed in a test tube, to which, afterward, .1 gramme of albumin is added, and it is allowed to digest for twenty-four hours in a brood oven or in a warm place. In another tube 10 c. c. of gastric contents, prepared in the same way, but without albumin, are placed in the same place for the same time. After this period, if no free acid is present, two or three drops of HCl are added, the solution is boiled in a test tube, and sodium carbonate added until no further precipitate is formed. These solutions are now filtered into two graduated tubes respectively, until six c. c. of each are obtained. Phosphotungstic acid and HCl are then added, as before, the whole is submitted to the action of centrifuge, and the difference in the reading of the two tubes divided by 300 will give the percentage of albumose peptone formed by the action of the gastric juice. This can be reckoned for 10 c. c., or can be reckoned as so many parts per 1,000. This method, employed in five cases, which comprise anacidity, subacidity and hyperacidity, gave the following results:

CASE I. Anacidity, with mild epileptic attacks. The gastric contents, removed one hour after a test meal, showed a tube reading of 1.4; with albumin, 3.3. The difference, 1.9, shows that 6.3 parts per

[1] Versammlung Deutscher Naturforscher und Aerzte, Wien, 1894.

1,000 were digested by the gastric juice. Fourteen days later another test made upon the same patient, who in the meantime had taken HCl, showed a tube reading of 1.3; with albumin, 4.4. The difference of 3.1 shows 10.1 parts per 1,000 digested.

Case II. Hyperacidity, with some dilatation, under the same conditions showed a tube reading of 3.9; with albumin, 5. The difference, 1.1, shows a digestive power of 3.6 per 1,000.

Case III. Deficient motility. Reading of the tube with albumin, 8 (3 c. c. used and calculated for 6 c. c.); without albumin, reading, 7. Difference, 1 c. c., shows digestive power of 3.3 parts per 1,000.

Case IV. Subacidity of neurotic origin. Reading of tube without albumin, 1.4; with albumin, 1.7; difference, .3. As the gastric contents were diluted with an equal amount of water, this factor must be multiplied by two, and equals .6 c. c., which gives a digestive power of 2 parts per 1,000.

Upon an examination of these results, one must be struck with the varying amounts of albumose peptone found in the pure gastric contents, and the question arises whether this cannot be a measure of the absorptive power of the stomach. We have excellent authority for this supposition. H. Tappeiner[3] and J. Brandl[4] both declare that not only albumose peptone but also acid albumin, and possibly soluble albumin, are absorbed in the stomach.

These results have been further substantiated by experiments performed upon persons suffering from almost complete closure of the pyloric orifice by malignant disease, in which solutions of albumose peptone of known strength taken into the stomach and after intervals of two to three hours removed by siphonage, showed a loss that could only be accounted for by their absorption in the stomach.

Furthermore, Riegel[5] states: "One can obtain an idea of the degree of the disturbance of absorption in the stomach by examination of the digestive products present in the stomach contents removed." In addition to this there appears to be a very unsatisfactory method extant of determining absorption. The method of Penzoldt and Faber,[6] which consists of ingestion of iodide of potash in capsules, has proved very unsatisfactory, and Boas[6] says: "According to my view, the time of elimination of iodide of potash is in no way a test of the absorptive ability of the stomach." Hence we are compelled to return to the question of the residual albumose peptone in the removed stomach contents as a possible measure of the absorptive power. This seems the more probable as it is incredible that only albumose peptone is poured into the intestine, and the less well-digested products remain in the stomach for further action. When, however, we find a large residual albumose peptone in the stomach, it may be due to faulty absorption or an unusually great activity of the digestive fluid present But, in general, it seems reasonable to consider the following statement as justified: The less the percentage of albumose peptone present, the greater the absorptive power of the stomach; and, vice versa, the greater the percentage, the less the absorptive power of the stomach. If, then, we regard this albumose peptone present as a measure of absorption, the digestive power of the gastric juice as a measure of its strength and activity, and the amount of gastric contents removed as a measure of motility, we have three factors which give us a fairly clear idea of the condition of the stomach. In order to get a clear idea of the correlative relation between these factors we will arrange the results of these five cases in a table, which reads as follows:

[3] Ueber Resorption im Magen, Zeitschr. für Biologie, vol. xvi, 1880, p. 497.
[4] Ueber Resorption und Secretion im Magen, Zeitschr. für Biologie, vol. xi, 1892, p. 277.
[5] Magenkrankheiten, 1897, p. 100.
[6] Berlin. klinische Wochensch., 1882.
[6] Magenkrankheiten, 1897, p. 215.

TABLE IV.

Nature of Case.	Amount Albumose Peptone. Per 1,000.	Digestive Power. Per 1,000.	Amount Removed.
Anacidity. First analysis.	4.6	6.3	128 c. c.
Second analysis.	6.3	10.1	105 "
Deficient motility.	13	3.6	135 "
Deficient motility.	23	3.3	100 "
Subacidity.	4.6	2	56 "
Gastric neurosis.	4	3.2	46 "

Upon looking at the above table we find these peculiar combinations: We may have good absorption, good digestive power and deficient motility, or we may have another combination of poor absorption, fair digestive power and deficient motility. These three factors once determined, in connection with the determination of the amount of rennin, make up an analysis which apparently affords us about all that chemical examination offers in the analysis of the stomach contents.

While it is possible that further examination and a larger number of cases may disprove these suggestions presented, yet it seems worth while to carry out this line of work until the truth or falsity of its deductions is proved. While chemistry can never completely supplant the means of physical examination presented to us, yet it must always form a powerful adjunct in the diagnosis of stomach disease.

Clinical Department.

NOTES FROM THE NEUROLOGICAL DEPARTMENT OF THE MASSACHUSETTS GENERAL HOSPITAL.

II. Two Cases of Thompsen's Disease, and One of Transient Myotone, Occurring in One Family.

BY S. A. LORD, M.D., BOSTON.

Case I. Howard J. G., an American of eighteen, came to the clinic on December 16, 1899, during the service of Dr. Walton, complaining of difficulty in opening the clenched hand, "crackling" in the joints, "prickling" in the limbs at times, and occasional numbness of the fingers and toes (but only when they became cold). He was "sickly" up to the age of nine, after which he became strong and athletic above the average (so he states), and lived as a farmer. When about twelve years old he began to notice a stiffening of the thigh muscles immediately after starting to climb upstairs, rendering him almost powerless to advance for several moments; this would then slowly lessen, full freedom and power of motion returning when two or three additional steps had been taken. The trouble grew more severe, so that in less than a year after the onset any considerable jar suf-

ficed to make his legs rigid in an instant. Finally he refused to go to school, on account of the ridicule to which he was subjected. It then became hard to open the hand after a firm squeeze (eighteen months after the onset). The tendency growing still more marked, every time he "stubbed" his toe he fell to the ground, all voluntary motion of the neck, body and limbs being temporarily abolished by tonic spasm; and, at the present time, the general rigidity is so complete on such occasions that a half minute often elapses before the patient can arise. He can always move the tongue and face muscles during these spasms. Except as a part of such universal rigidity he never perceives involvement of the erector spinæ, the motions of stooping and rising being quite free After a sneeze, it is said, he cannot straighten up for a few moments, on account of the abdominal spasm. Involvement of the pectoralis, trapezius, latissimus dorsi, or deltoid is not often marked enough to inconvenience him. He states that jaw movements are occasionally difficult, especially when he has been exposed to cold; and the same is true of the tongue. In the legs the impeded thigh movements annoy him more than anything else, but the muscles below also are not spared, the flexor spasm of the toes resembling that of the fingers.

The rigidity is described as transient, not returning as long as action is kept up. The patient "could chop wood all day" if no variation in the motion were attempted. Likewise he can walk indefinitely when once over the initial disability, and states that he can run upstairs provided that some preliminary "dancing" is indulged in, and that there is never the slightest hesitation in going downstairs. He is confident that fear has no effect. Provided that he does not *sweat*, the whole tendency decreases on hot days; sweating exerts a marked influence for the bad, according to him, as does exposure to cold. He thinks that hard work makes the trouble worse, unless he can keep from perspiring. Effort to overcome the spasm is not only almost entirely ineffectual and very painful, but, in addition, is said to prolong distinctly its duration. Damp weather increases it. There has been no opportunity to judge of the effect of alcohol.

The disorder steadily increases in severity. This has been made especially evident recently in connection with the milking of cows, which can now be accomplished only after fifteen minutes' practice. He has, in fact, been inefficient in all employments essayed of late. He states that notwithstanding this progression of the disease, his muscles are becoming stronger as well as larger, and that he is still growing. There has been noticed during the past year a marked tendency to nose-bleed. The general health is excellent, and the mental and vital development normal, puberty having been reached at fourteen and the sexual power being adequate. The patient is temperate and of good habits.

Family history. — This is incomplete on the maternal side, but is said to be in general good. No instances of myotonia except the three here discussed are known in the family.

Status. — The patient is below medium height; he is well nourished, with slightly developed panniculus adiposus and remarkably developed muscles, those in the legs being strikingly large. The thigh measures 21½ inches (54 centimetres) and the calf 15½ inches (40 centimetres). Over the scrotum and penis there is a condition of vitiligo, but the organs are well developed. The maximum impulse is in the fourth space, and the pulse (patient standing) 106 (it is to be regretted that the constancy of this rapid rate was not confirmed); the sounds and boundaries are normal. The thyroid gland is present, of normal size. Hearing and eyesight are good. Slight ulcerations are found on the septum, accounting for the nose-bleed, and there is a small adenoid. Cover-slips of the blood showed nothing abnormal, either in the character of the reds or in the differential white count. The red count was unfortunately inaccurate, but it seems almost certain that there was no deficiency in number. There was an apparent plethora. The urine is of normal appearance and specific gravity and contains no albumin or sugar.

Sensation. — Everywhere normal, unless the remarkable intolerance of the skin to painful and (less decidedly) to tactile stimuli be deemed hyperesthesia; there was no examination of visual fields or fundus. On palpation, the muscles are found to be abnormally firm, especially those of the legs. There is slight, fine tremor of the hands; no fibrillation or inco-ordination. The muscle bellies are of the short type.

Reflexes. — The pupils are normal. The knee-jerk is difficult to obtain; with re-enforcement it is present in normal degree, but shows tendency to weaken after three or four repetitions. The observations as to whether it was completely abolished on repetition were somewhat contradictory on different occasions; this is not surprising, considering the well-known variations in degree which the symptoms present in the individual case of myotonia. It happened at least once that I was unable to obtain the knee-jerk after several responses, successively lessening in vigor, had been excited. Local myotatic irritability may still be observed during the (only apparent?) absence of knee-jerk. The Achilles phenomenon presents a contrast: repetition certainly does not weaken it and it is easily obtained. There is no ankle clonus or triceps- or wrist-jerk. The front-tap contraction is present. The cremasteric, abdominal and plantar reflexes are normal.

Voluntary motion. — The gait and leg movements in general are somewhat slow. Two or three trials in quick succession did not enable the patient to run rapidly upstairs, even after the initial spasm had passed away. This residual awkwardness is probably pathological, and is accounted for perhaps by the fact that in this patient the subsidence of myotonic rigidity is not at once perfect, that after cessation of the evident spasm some further improvement in functional ability goes on, perhaps also in part by the abnormal consistency of the hypertrophied muscles. The muscular strength is poor compared to the development, but there is no evidence that the muscles tire quickly. Motions of the face, lips, eyes, eyelids, pharynx and larynx are absolutely normal, and there is no hindrance to the actions of spinal flexion and extension or to respiration. When the jaws are closed tightly the masseters become very firm and prominent and remain so for several moments after attempt is made to relax. Lateral but not forward movements of the jaws also result in after-spasm. The action of the genioglossus in the motions of the tongue is perfect, but the intrinsic muscles work slowly for an instant when an attempt is made to curl the tongue

backward or to execute lateral movements rapidly. The disorder is well marked in the neck muscles; on forced rotation the neck becomes set in that position for a time. In anteroposterior action the spasm appears after two or three oscillations, the head then becoming fixed; on lateral flexion the spasm is not so marked. The trapezius and other shoulder girdle muscles and those of the upper arm all present the characteristic tonic after-contraction; it is extremely pronounced in the biceps, triceps and in the flexor group of the forearm. On shutting the hand tightly it can be opened only with the greatest effort and slowness, and there is a high degree of resistance to passive extension; not so great, however, but that it can be overcome. Ordinary hand movements are free after two or three voluntary openings and closings. Severer tests, requiring much continued effort (as in the action of milking, already alluded to), would probably make it evident that a certain amount of impediment to motion persists several minutes; this statement seems justified in view of the positive testimony of the patient as to the protracted difficulty now experienced in milking cows. The gradual betterment of his walking power during the first mile or two bears equal significance, and is mentioned here to emphasize this point. The extensors of the fingers, contrasting sharply with the flexors, show a remarkable exemption from spasm — apparently complete — for the open hand can always be closed with instant readiness, The wrist, again, is involved both in extension and flexion. The small hand muscles are also involved in some motions, but writing, though labored, causes no spasm. There is momentary after-spasm of the abdomen on coughing. Lateral and rotatory trunk movements are similarly affected. The thigh muscles become rigid with the attempt to sit down on a chair twice or thrice rapidly, the patient being finally left standing, unable to bend his stiff legs. Adduction of the thighs is involved, but abduction shows an apparent exemption. The toes, like the fingers, can always be flexed at will, but extension is slow and difficult. The spasm is most intense, prompt and prolonged in the forearm and thigh. An attempt to go briskly upstairs is arrested on the third or fourth step, but not absolutely. progress being possible, though barely perceptible, throughout the duration of the spasm. The degree of rigidity in the legs is brought sharply to notice by the loud snapping of knee tendons during relaxation of the spasms. On placing the phonendoscope upon the joints in action, vibrations of seemingly abnormal intensity are heard.

With regard to voluntary movement after rest, then, rigidity is seen never to manifest itself till the intended contraction, with its entailed single motion, has been performed If, now, that contraction has been extreme, if the effort is intense, the muscle will not relax despite the pulling of antagonists. Spasm does not therefore occur strictly at the *beginning* of intended movement. With less vigorous effort the spasm is less marked, and its development is not abrupt, one or two relaxations and contractions being possible before motion is suspended. The rigidity at its maximum does not utterly abolish motion. It is not seen to last more than eight seconds, begins to decrease with the third, and has disappeared with the fourth movement. Attention exercises no visible influence. Prolongation of the resting time has distinct influence in intensifying the next spasm. To ensure the appearance of spasm at resumption of motion a rest of at least sixty seconds is necessary if the muscles have been brought to a freely working state. The rapid cessation of spasm observed during the third and fourth movements seems to be followed by further improvement in muscular control, which is mostly subjective and extends over fifteen minutes or more if action continues. The immediate cause of impeded motion is the failure of the muscle, once contracted, to relax; involvement of the antagonists is seen as an augmenting factor, but this does not seem to be an element in the case of finger-and-toe movements, in which the singular immunity of the extensors results in the arrest of motion in flexion. The sudden generalized rigidity following a stumble, previously mentioned, doubtless has in its direct production the elements both of mechanical excitation and of intense effort.

Mechanical irritability of the muscles. — This is exaggerated in a way absolutely typical of congenital myotonia. The facial muscles and the masseters do not show the reaction. In general, a fairly sharp blow is needed to bring it forth. On striking the deltoid, the whole muscle becomes rigid, the rigidity being greatest at the point struck, with the production there of a deep furrow, lasting several seconds. It is less easily produced in the forearm muscles. I could not obtain it in the erector-spinæ mass. It is very marked in the thigh; here a quick blow with the fist causes a prolonged tonic spasm of the whole extensor group, the separate bellies standing out prominently. Well-defined furrows can be called forth by brisk strokes with small instruments; the vastus externus is especially susceptible. The same phenomena may be observed in all the groups of leg muscles. No idiomuscular mound was seen, and a trial to obtain the contraction by pressure was unsuccessful. The persistance of this irritability during apparent absence of knee-jerk has been mentioned. Attempt to elicit the "paradoxical contraction" by dorsal foot-flexion was without success. The *nerves* do not show increased mechanical excitability (facial, peroneal).

Myotonic electrical reactions. — These were studied in the deltoid, the arm and forearm and thigh muscles; those of the face reacted normally to both currents. Faradism: The muscles react to weak currents, which call forth momentary contractions when momentarily applied, tetanic after-spasm when the stimulation is longer. A deep furrow lasting nearly ten seconds after slightly prolonged stimulation can be produced with a very weak current. Galvanism: Weak currents act like the faradic. Tetanic after-spasm is seen in the quadriceps with five milliampères, both poles; the spasm slowly disappears and successive shocks lose their efficacy, there being finally no response. If the poles are then reversed the contraction again appears. No rhythmical contraction could be demonstrated; the strength and duration of current found requisite by other observers could not be borne by this patient. Commonly it is impossible to obtain opening contractions in this disease, but they were twice seen in this case, in the quadriceps at the anode. With a strength of ten milliampères a remarkable pulsating contraction, not exactly rhythmical, and showing no appreciable polar relation, was observed in the same muscle. The relations of the poles are apparently not entirely constant; in the quadriceps CaClC > AnClC and CaClC < AnClC were both noticed. In the deltoid, however, the anodal contrac-

tions are constantly greater than the cathodal. *The reaction of the nerves* to electricity is normal to both currents. Labile galvanic stimulation, mentioned by Oppenheim in his text-book as giving rise to myotonic reaction, was not tried.

CASE II. Brother of Howard G.; is a clinical counterpart if the descriptions are correct. This person lives in a distant State, and I have not seen him. He is two years older than H.; the symptoms came on at the same time of life — two years before puberty — and are of like severity. He is said to be subject to occasional attacks, in which there is complete loss of consciousness along with myotonic condition of body and limbs (resembling that of H. after stumbling), thus presenting the not infrequent combination (Oppenheim) of Thompsen's disease with epilepsy, in all probability. It is to be understood that myotonia exists in typical form in the intervals.

CASE III. Cordelia G., age twenty-three, single, sister of Howard G.; is well and strong except that for a week before each catamenial period she experiences a peculiar momentary motor incapacity of the legs on going upstairs, after taking two or three steps; it never amounts to anything like total arrest of power, but is well marked. This gradually increases as the period approaches, but disappears wholly when the flow begins. There is also some difficulty in arising from a squatting posture at such times. Nothing but true myotonic affection, in very slight degree, seems to explain these symptoms. The hands and arms are not affected, nor any other muscles, according to the patient's knowledge. The trouble came on at sixteen. This woman I saw personally, but have not seen the manifestations she describes. They are best termed "transient myotone," but the propensity is probably congenital.

In the other cases the diagnosis — Thompsen's disease — cannot be questioned; and though the name myotonia congenita has not its usual applicability here, inasmuch as the affection did not appear in infancy, it is more suitable than that of myotonia *acquisata*, because the symptoms are otherwise typical of the congenital form and because the family tendency is pronounced; such late onset is uncommon in the family type, but has been observed. Myotonia may indeed have existed unnoticed in early childhood.

In the literature are many atypical cases and numerous instances of associated conditions, of which two — progressive muscular dystrophy and paramyotonia congenita — deserve mention here, for in the case of Howard G. there is a resemblance to dystrophy in the weak, short-bellied and hypertrophied muscles, which present further an abnormally firm (though not lumpy) consistence; a likeness to paramyotonia on the other hand is seen in the influence of cold on the actions of the tongue and jaw muscles.

Worthy of recapitulation are the following points of particular interest: (1) The unusually late onset; (2) the continued progression of the disease; (3) the brief duration of the after-spasm — considering that the occasional occurrence of almost universal rigidity indicates a severe form of the affection; (4) the protracted persistence of a slight amount of spasm, usually in this case not evident except subjectively as a feeling of awkwardness; (5) the exemption of the erector spinæ and of the finger and toe extensors from spasm; (6) the diminished knee-jerks and their tendency to disappear; (7) the final absence of response to electric shocks after repetition, and (8) the reappearance of the response if the poles are reversed; (9) the presence of opening contractions, and (10) the absolute periodicity of the myotonic symptoms in the sister, this condition not having been previously reported so far as I know.

These cases present nothing new concerning the most interesting question in connection with myotonia — its etiology. The remarkable periodicity observed in the case of the sister seems to indicate merely either that wholly new conditions exist in the organism at the catamenial time, sufficient to bring about a myotonic state, or that a constant latent tendency is aggravated into evidence by the disturbance of vital equilibrium common at the menstrual period. Of the immediate or ultimate causes of myotonic spasm we have no knowledge. The much-divided opinion as to the direct cause has perhaps favored a muscular origin, while there are still adherents of the auto-intoxication theories. The classic muscle-fibre appearances have now a doubtful significance, however, particularly since Jacoby showed that they may arise through faulty technique.

It will always be difficult to rule out the participation of either one of the structural elements concerned, the nervous and the muscular, on account of their intimate and inseparable connection in function. But it is permissible to remark that, regarding the immediate, direct cause of the spasm, more will probably be heard of *inhibition* than heretofore, in view of the great importance now attached to it in the minds of physiologists, as a normal and constant element in all vital phenomena. If these phenomena are but resultants of the antagonistic actions of the two nervous forces, acting always concomitantly, of which inhibition is one, then we may reasonably regard myotonic spasm as the result of defective inhibitory supply. This would express only the immediate cause of the spasm, for those subtle influences determining the quantity and distribution of inhibitory impulses — in this conception the ultimate causes of the spasm — are of course unknown to us in our absolute ignorance of the nature of inhibition itself. Such a supposition is apparently as plausible as others put forth, and offers the further advantage of allowing an expression of the facts (in part imperfectly, it must be acknowledged) in terms of a physiological process, of simply a loss of balance between the opposing forces in the delicately adjusted nervous system. As Schultze has recently remarked, however, it is hardly profitable to speculate at length concerning the etiology of this disease so long as our knowledge of the physiology of muscular contraction remains far from complete. And Bernhardt, still more recently, in reporting a unique case combining the symptoms of atypical Thompsen's disease with those of paramyotonia and atrophy (questionably neuritic), comments upon the possible importance of the relation of myotonia congenita to those and other diseases, and urges an exhaustive review of the subject of etiology, with a complete recasting of our ideas as to it from the point of view of such relation.

REFERENCES.

Jacoby, G. W. On Myotonia. Journal of Nervous and Mental Diseases, July, 1898.
Schultze. Mendel's Jahresbericht for 1898.
Bernhardt. Ueber einen atypischen Fall v. d. Th. Krankheit. Deut. med. Woch., No. 11, 1899.

Medical Progress.

REPORT ON PROGRESS IN PATHOLOGY.

BY JAMES H. WRIGHT, M.D., BOSTON,
Director of the Laboratory of the Massachusetts General Hospital.

MALARIA AND MOSQUITOES.

In a paper read before the Tenth Congress of the Societá Italiana di Medicina Interna, Bastianelli and Bignami [1] sum up the results of their observations on the transmission of malarial infection by mosquitoes. They have experimented with all three forms of malaria: the estivo-autumnal, the tertian and the quartan. With the co-operation of Grassi, a zoölogist, they think they have demonstrated that the only kinds of mosquitoes that are concerned in the transmission of the disease are various species of the genus anopheles. These are found only in malarial districts. The parasite peculiar to each form of malarial fever has two life cycles, one completed in man and the other begun in man and completed in the mosquito. The cycle carried out in man is the one already long known, which is characterized by the breaking up, or the segmentation, of the adult parasite into a number of young parasites. The other cycle is represented in the estivo-autumnal fever by the "crescents," and in the other fevers by certain forms of the parasite which the authors do not clearly describe. These forms are regarded as sexual forms, and the authors seem to think that they are incapable of producing themselves in man. When they are taken into the stomach of the mosquito, however, they go through a special life cycle lasting ten or twenty days or more, as follows: Some of them develop into the well-known "flagellate bodies," and some develop into peculiar round bodies without flagella. Next, the flagella detach themselves from the "flagellate bodies" and one of the flagella penetrates a round body to impregnate it. The round bodies so impregnated then undergo certain changes and make their way into the wall of the intestine. Here they increase in size, and acquire each a delicate enveloping membrane, and segment into a great number of smaller bodies. The latter then elongate themselves and assume a filiform appearance. Later the enveloping membrane ruptures and the filiform bodies are disseminated throughout the body of the mosquito and eventually accumulate in the cells of the salivary glands, whence they are discharged into the blood of man. The authors found difficulty in infecting the mosquitoes with quartan parasites, although they did succeed in doing so. They explain this on the ground that the quartan parasite probably develops in man only a few sexual forms that are capable of undergoing further development in the mosquito.

These interesting results of these Italian observers are the direct outcome of the brilliant work of Major Ross, done a few years ago, who showed that in the stomach of mosquitoes fed on the blood of malarial patients the crescentic parasites develop into the flagellated forms and liberate their flagella. He also showed that a certain parasite, very similar to the malarial parasite found in the blood of birds, underwent a peculiar cycle of development in the body of the mosquito and that such infected mosquitoes were capable of infecting healthy birds by their bites.

The observation by MacCullom that the flagella of the flagellated bodies behave like male reproductive elements has also contributed not a little to the development of our knowledge of this subject.

According to Bastianelli and Bignami, the crescentic bodies found in the blood in the estivo-autumnal fever originate principally in the bone marrow, where many young forms are to be found.

They state that a single mosquito may infect an individual, and in fact, several individuals, for they have found numerous parasites in the salivary glands of mosquitoes by whose bites they have experimentally produced malaria in healthy subjects. They have also made a study of the mosquitoes of very malarious districts in Italy, where almost the only genus is the anopheles. In the months of June and July only three per cent. of the mosquitoes examined were found infected with the parasites, while those caught far from any habitation were found free from malarial infection. They concluded from this that the few malarial infected mosquitoes met with here acquired the parasite from persons who were suffering from relapses of malaria. They also reported the following interesting observations: A number of harvesters were housed in a big granary. In this on June 23d, only one mosquito was found. On the 24th, eight mosquitoes were found, and on July 1st, 366. Of these 90 were examined and only three were found to be infected, but subsequently the number of the infected mosquitoes rapidly increased. At another place 42 laborers were housed in huts on an estate. On July 2d, out of seven mosquitoes only two were found infected. On July 17th, 15 mosquitoes out of 32 were found infected, and on July 20th, 11 mosquitoes among 17 contained the malarial parasites. Mosquitoes captured during the same period in the stables of the estate or at a distance were found free from infection as a rule. At the end of July or early part of August, nearly all of the men who had lived in the huts during this period had become affected with malaria.

As regards the prevention or limitation of the spread of the disease, the authors emphasize the necessity of getting rid of stagnant water and also the necessity of administering quinine early in the disease, for thus not only is the danger of relapse diminished, but the development of the parasites into those forms that complete their life history in the mosquito is prevented or interfered with. They think that malaria should be regarded by the authorities as an epidemic or contagious disease and treated accordingly.

[1] Lancet, January 13, 1900. Translated by Dr. G. S. Brock.

PIGMENTATION IN ADDISON'S DISEASE.

The mechanism of the pigmentation in Addison's disease has been studied by only a few observers. According to Nothnagel, the pigment is carried from the blood to the epithelial cells of the skin by means of "wandering cells." The pigment was also found by Nothnagel about the vessels of the skin and in their walls.

Riehl found hemorrhages about the vessels of the cutis and in the neighborhood of these hemorrhages brown-colored "cutis" cells. Many of the vessels were thrombosed. According to Riehl, the cutis cells derived their pigment from extravasated red blood corpuscles.

Von Kahlden could not confirm the observations of Riehl. He found in the case of the tongue that the pigment was contained chiefly in the cells of the papillæ and not in the epithelium. In the subpapillary

layer amorphous black pigment was often present in the form of granules and clumps and outside of cells. He also found in some vessels black pigment granules among the red corpuscles.

Pförringer,[3] in a recent article, reports the results of his study of this subject. The case was a typical one, there being extensive tuberculosis of the adrenals. He could find no microscopic changes which seemed to him significant, neither in the splanchnic, nor in the sympathetic nerves, nor in the semilunar ganglion. The microscopic examination of the pigmented skin showed, in the tissue of the cutis, pigment in clumps, and, in the vessels of the part, pigment in granules, free or enclosed in blood corpuscles. The author thinks that the pigment in this disease comes from the blood, leaving the capillaries as granules either free or enclosed in leucocytes. He does not deny that the "wandering cells" may play a part in carrying this pigment, but he thinks that some of it gets into the epithelium directly from the vessels, which in many instances lie very close to the lowest layers of the epidermis. Upon the primary origin of the pigment he has no definite opinion.

A CASE OF HEMOCHROMATOSIS.

E. L. Opie[3] reports a case of typhoid fever with pigmentation of the skin and various organs, notably the liver, pancreas, heart and gastro-intestinal tract. There was also cirrhosis of the liver and chronic interstitial pancreatitis. Microscopical examination showed an abundant deposit of pigment throughout the liver tissue. This pigment gave the microchemical reactions characteristic of iron. In addition to this pigment a second form was present which gave no iron reaction. It was in the form of small granules in the smooth muscle cells of the blood-vessels and in their connective-tissue sheaths. Both forms of pigment were also present in the pancreas. In the heart, the iron containing pigment was found in large amount in the muscle cells. In the gastro-intestinal tract, both forms of pigment were present, the iron-free form predominating. It was situated in the smooth muscles and in the connective-tissue cells. There was a less degree of pigmentation of other organs.

In the liver, necrosis of the liver cells was frequently observed in association with the pigment accumulation. The author seems to think that the necrosis and the interstitial increase in the pancreas are the results of the cell death, brought about by the pigment deposits. He regards the iron containing pigment as derived from the hemoglobin of the blood, which is set free by breaking off the red blood corpuscles. He calls attention to the fact that in all cases of so-called bronzed diabetes there has been found a chronic inflammation of the pancreas. The diabetes in these cases seems to be a result of the chronic inflammation of the pancreas and to be a terminal event in a disease characterized by general pigmentation. In Opie's opinion, the interstitial changes in the pancreas are the result of necrosis of the pancreatic cells, produced by the deposition of the iron pigment. In this view bronzed diabetes would be a disease which is due primarily to a destruction of the red blood corpuscles. As Welch has pointed out, however, in his discussion of Dr. Opie's paper, it seems that this explanation of the disease is inadequate, for a number of conditions are known in which there is much destruction of red blood corpuscles without the production of pigment deposits like those in the present case.

[3] Centralblatt für allgem. Path. u. path. Anat., Band xi, No. 1, January 2, 1900.
[3] Bulletin of the Johns Hopkins Hospital, November, 1899, and ournal of Experimental Medicine, vol. iv, Nos. 3, 4.

THE GONOCOCCUS IN ACUTE DIFFUSE PERITONITIS.

Cushing[4] reports finding gonococci in the peritoneal exudate in two cases of diffuse acute peritonitis secondary to salpingitis. The gonococci were found in cover-glass examination in both cases, and in one of the cases they were isolated in cultures as well. They were not present in the uterus or in the vagina, but were found in the inflamed Fallopian tubes.

These cases are worthy of mention, because notwithstanding the widely accepted view that cases of peritonitis due to the gonococcus are not uncommon, the only other case of acute peritonitis that we know of in which gonococci were satisfactorily demonstrated is the one reported by Wertheim in 1882.

HISTOGENESIS OF PERITONEAL ADHESIONS.

Büttner[5] has studied the process of organization of the fibrinous peritoneal exudates. He finds that the first step in the process is the proliferation of the connective-tissue cells beneath the flat pavement cells of the peritoneum. These connective-tissue cells had begun to proliferate by the end of the second day. They elongated themselves and grew into the exudate into which they had penetrated far after five days, when newly formed blood-vessels derived from the adjacent vessels of the part also made their appearance. The flat cells of the peritoneum in the affected region were not actively concerned in the process of the organization. They became swollen, were loosened from their attachments, and after three and one-half days only fragments of them were to be found.

BACTERIA IN TYPHUS FEVER.

Balfour and Porter[6] have made cultures from the circulating blood in 43 cases of typhus fever. In 36 out of the 43 a diplococcus was found. This organism appears from their descriptions to have considerable resemblance to some of the cocci which normally inhabit the skin. The blood for examination was obtained from the thumb of the patient in every case, the skin being thoroughly disinfected beforehand. The cultures were made by mixing the blood so obtained with bouillon. No growth was obtained from blood placed on solid culture media, but the organism, after growing in bouillon, grew readily on the ordinary solid culture media. The authors seem to have fully appreciated the likelihood of results obtained with such methods being open to serious criticism, and that it would be hard to convince bacteriologists that the organism they obtained was not an inhabitant of the skin. With the idea of meeting such criticism they report a number of examinations of control cases, among these being cases of measles, scarlet fever and typhoid fever. In 40 of 46 cases of typhoid fever the same diplococcus was found, but it was not encountered in any of the other cases.

Twelve cases of typhus were examined at autopsy. In eight out of these nine cases pure cultures of the diplococcus were obtained from one or other of the internal organs. Inoculation experiments with the

[4] Bulletin of the Johns Hopkins Hospital, May, 1899.
[5] Beiträge z. path. Anat. u. allgem. Path., Bd. xxv, S. 453, 1899.
[6] Edinburgh Medical Journal, December, 1899.

diplococcus on animals showed that it was pathogenic for rabbits by intravenous inoculation, producing a rapidly fatal septicemia. From the inoculation of guinea-pigs no positive results were obtained. In monkeys, while no fatal effect by subcutaneous inoculation was produced, yet some days after the inoculation, the diplococci were found in the circulating blood. A monkey intravenously inoculated gave a negative result.

While these observations are interesting and suggestive, they require confirmation before they will be generally accepted as of much value.

A CASE OF TRUE LYMPHOMA.

E. R. Le Count[7] reports his examination of a tumor of the groin the size of a pigeon's egg, which in microscopical structure was identical with a lymphatic gland, having the follicles and sinuses which are characteristic of these organs. Such a tumor as this seems to be of rare occurrence. Most of the tumors which are described as lymphomata do not repeat the structure of a lymphatic gland. This tumor must be regarded as an example of a true lymphoma. The author emphasizes the need of a thorough revision of the classification of tumors of lymphatic glands.

SCROFULOUS LYMPHADENITIS.

F. C. Moore[8] has tested the virulence of the tubercle bacilli in 26 cases of this condition. He found that the tubercle bacilli from these cases were clearly less virulent for animals than the bacilli from pulmonary phthisis. The author seems inclined to regard this diminution in violence as due to the natural resistance of the tissues of the lymphatic glands rather than to a primary low grade of virulence in the bacilli themselves.

A CASE OF BLASTOMYCETIC DERMATITIS.

L. Hektoen[9] reports a fifth case of blastomycetic dermatitis. The disease involved a considerable area on the right leg, and the dorsal aspect of a portion of the right thumb, wrist and forearm. The affected skin was reddish in color with thickening and induration; there were no pustules or vesicles. Microscopic examination showed essentially a chronic suppurative process with hyperlasia of the epidermis. The parasites appeared in microscopic preparations of the lesions as round or oval bodies provided with a homogeneous capsule. Their protoplasm was granular and sometimes contained a vacuole. The organism seemed to multiply by budding as does the yeast organism. The organism grew readily on the ordinary culture media, but beerwort agar was found best suited for its growth. Animal inoculations showed that the organism was pathogenic to rabbits, guinea-pigs, white rats and gray mice. In these animals its effects are chiefly local, producing necrosis, suppuration and granulation tissue formation. It also seems to produce a slow toxemia which in time may become fatal. A young dog, into whose jugular vein a suspension of the growth had been injected, died greatly emaciated within a few weeks. The autopsy and subsequent microscopic examination showed minute foci of granulation tissue scattered throughout the lungs, and focal lesions in the kidneys. The organism was recovered by cultures from the lungs and kidneys. This yeast-like organism is very much like the one described by Gilchrist and Stokes a few years ago, yet shows some cultural differences.

[7] Journal of Experimental Medicine, vol. iv, Nos. 5, 6.
[8] Journal of Pathology and Bacteriology, vol. vi, May and August, 1899.
[9] Journal of Experimental Medicine, vol. iv, Nos. 3, 4, May and July, 1899.

THE VITALITY OF THE BACILLUS OF THE PLAGUE.

Yokote[10] buried mice dead of the infection with the bacillus of plague in garden earth, and tested the dead bodies from time to time for the presence of the bacillus. He found that the bacilli survived in tissues of the dead animal for thirty days at the longest. They disappeared more quickly if the putrefactive process was active. The bodies were buried in wooden boxes, and it is interesting to note that in the earth of their vicinity none of the bacilli were found.

HYDROCEPHALUS AND HYPOPLASIA OF THE ADRENALS.

Czerny[11] has found imperfect development or absence of the medullary portion of the adrenals in five cases of hydrocephalus in children. Since no signs of degenerative changes were observed the author regards the condition in the adrenals as an anomaly of development. He has no adequate explanation to offer of this remarkable association of conditions.

THE EXPERIMENTAL PRODUCTION OF CANCER.

Lack[12] reports the results on experiments on rabbits in which the ovaries were incised and scraped with a knife, and the fluid which exuded allowed to spread over the peritoneum. One of the rabbits lived for nearly a year, when it became emaciated and was killed. At the autopsy numerous firm white nodules were found in the mesentery, pleura, lungs and uterus. There were also areas of firm tissue in the liver, together with many cystic formations. The nodules were found to exhibit the typical microscopical structure of carcinoma of the ovaries, consisting of columnar epithelium, arranged in alveolar spaces and of a connective-tissue stroma. In Lack's view, carcinoma is essentially an invasion of the lymph spaces by normal epithelium; once arrived in this space the cells continue to multiply. The frequent carcinosis of the peritoneum that follows the removal of cystomata of the ovaries is regarded by the author as the result, in some cases, of the escape of the free cells from the tumor into the peritoneal cavity. He does not believe that the occurrence of carcinosis of the peritoneum in these cases is necessarily a sign that the original neoplasm was of carcinomatous or malignant nature.

[10] Centralblatt f. Bakt. u. Parasitenk, Band xxiii, No. 24.
[11] Centralblat f. allgem. Path. u. path. Anat., Band x, No. 7, 1899.
[12] Journal of Pathology and Bacteriology, vol. vi, 1899.

Reports of Societies.

THE OBSTETRICAL SOCIETY OF BOSTON.

MALCOLM STORER, M.D., SECRETARY.

Meeting of November 21, 1899, the President, Dr. Alfred Worcester, in the chair.

Dr. W. L. Burrage read a paper entitled

FURTHER EXPERIENCE WITH THE OPERATIVE TREATMENT OF RETROPOSITION WITH ANTEFLEXION.[1]

[1] See page 241 of the Journal.

DR. E. REYNOLDS: I would like to ask whether the uterus as a whole has a tendency to sag forward after the division of the posterior ligaments.

DR. BURRAGE: I have never noticed any such tendency, nor, on the other hand, do the divided ligaments tend to contract. A lozenge-shaped gap is left after the division of the ligaments over which the peritoneum is adjusted.

DR. C. H. NOBLE, of Philadelphia, by invitation, read a paper entitled

REMARKS UPON THE TECHNIQUE OF THE CLOSURE OF THE ABDOMINAL WOUND.[2]

DR. M. H. RICHARDSON: I have of course used at one time and another various methods to close the abdominal wall, but have never seen any reason to give up the through-and-through suture. I should not be willing to accept as an axiom that this suture is more liable to suppurate than any other. As to hernias, while I can give no figures, the number that have occurred in my practice must be extremely small, otherwise I would be apt to hear of more. Of course it is possible that other men sew up my hernias as I sometimes do theirs, but they would be apt to let me know. I always notify other surgeons when operating upon cases upon which they have worked previously. Of course in suppurating wounds the percentage of hernias is large, but I am surprised that it is not greater. While my number of wound infections, of course, cannot be smaller than the splendid showing of the reader, it certainly is very small indeed. In the first six months of this year in over 200 abdominal operations I can hardly remember a single wound infection, even in appendix operations. The last 260 intercurrent appendix cases all recovered without wound infection. The great disadvantage of the layer suture is that it leaves one or two dead spaces. I never saw a wound which might not become filled with blood. This is well shown in breast cases, where we are very careful to stop all oozing, yet it is common to see a hematoma. It seems to me that there is more liability for infection to take place where such dead spaces are present. In stout people I am apt to sew through and through and then sew up the aponeurosis separately. From 1886 to 1892 I used silver wire almost entirely. The great objection is that the buried ends are apt to irritate. Now I use nothing whatever but silk, and see no reason to abandon its use, and it certainly is excessively rare to have to take out a buried suture. I object to catgut because it does not bite; in tying a large artery with catgut it does not feel secure. I do not like to desert an approved method, and so I stick to silk.

As to disinfection, I think gloves are the greatest advance that has been made in surgery in late years. Previously we have seen every year one or two cases going to the bad inexplicably with general peritonitis. Now with gloves nothing of the kind occurs. In the last six months I have also used a gauze mask. I do not believe there is any very great danger of infecting a wound after a few hours. By that time it has become sealed up.

DR. J. G. BLAKE: In Alexander's operation my results have been satisfactory with interrupted sutures, followed by the dusting with iodoform or dermatol. In 60 or 70 cases I can hardly recall more than one or two of suppuration.

[2] See page 256 of the Journal.

DR. G. HAVEN: I have not been able to see very much difference as regards hernias or suppuration no matter which method was used.

DR. G. H. WASHBURN: I have seen very few hernias following the abdominal operation, and it has so happened that most of those few have followed the tier suture. Sometimes I use one method and sometimes the other.

DR. W. L. BURRAGE: I am absolutely in favor of the tier method. From theoretical reasons the abdominal wall must be stronger when we bring back the layers as nearly as possible as they were before operation. Dead spaces can be avoided by bringing the layers together by one or two deeper sutures. I use chlorinated lime and soda and rubber gloves. Instead of adhesive straps I put collodion on gauze around the wound. This stays on for a week. I think a woman is entitled to having her abdominal wall restored to its original state as nearly as possible if we have time enough to do so. Torri has shown the great advantage of the tier method, and also that the through-and-through method gives a potential hernia in many cases.

DR. E. REYNOLDS: For a number of years I have been studying this subject, and it is my custom always to try the strength of the abdominal wound from inside with my finger before closing. I think that theoretically the tier method has advantages in all abdominal incisions except in Cæsarean sections. Practically I have gone back to a modified through-and-through suture. In small wounds where there has been little manipulation, I do the layer suture. In long operations with a large incision, I have been surprised to see how much separation of the layers there always is and how hard it is to fill in the dead spaces. My method of closure is to catch the peritoneum together with fine silk and then do a through-and-through suture, picking up the muscle as I go, while at the lower angle of the wound I put one or two silkworm-gut sutures well below the cut, with especial reference to hernia, killing any dead space, for some years ago I noticed that all hernias start in the lower angle of the wound. The only trouble with the layer suture that I have found has been in the subcutaneous fat, especially in very fat women. I think gloves the greatest advance made for a long time. The man who always uses them is apt to have clean hands, and, furthermore, they enable us to do clean work soon after touching a septic case. Finally, I do not think we all appreciate the importance of slight septic infection in determining the result in critical cases. Since using gloves it seems to me that critical cases have done better than before. I agree with Dr. Richardson as to the importance of the face mask. I have seen a hair drop from the beard into the abdominal cavity.

DR. J. B. BLAKE asked as to the use of the swathe after operation.

DR. NOBLE: I tell my patients to wear one for a year, but a swathe can do little good unless a woman has a pendulous abdomen, except in so far that it reminds her that she has had an operation performed and must be careful. I have been asked as to the cumol catgut. In my experience it has been perfectly satisfactory.

DR. G. W. W. BREWSTER: It has seemed to me that in some cases in using the through-and-through suture trouble comes from tying the stitches too tightly, and therefore it is sometimes of advantage

to do the first dressing sooner than a week and cut one or two stitches if any appear too tight.

Dr. F. H. Davenport: I use the through-and-through method, except that in very fat women I put a suture in the aponeurosis of silk or catgut, feeling that the aponeurosis is the most important structure. My relatively few hernias have been where drainage was used or a second laparotomy was done. I cannot but feel that there is danger of infection if the wound becomes exposed to the air. Frequent changing of the dressing can avoid this, and accordingly it is my custom to change the dressing after forty-eight hours and every day after that.

Dr. Malcolm Storer: I have been struck by the tendency of the scar of the intracuticular suture to spread out after six or more months. Of late it has been my practice to sew the peritoneum, muscle and aponeurosis in layers, and then use interrupted silkworm sutures through the skin and fat, catching up a little of the aponeurosis in the median line to avoid a dead space. Since I have employed this method the scars, seen after a few months, seem to be much more linear and firm.

Dr. Noble: I am surprised that here in Boston the through-and-through suture should still find so many warm advocates. The researches of Winter ten years ago and Abel more recently showed that hernias are ten times as apt to occur with the through-and-through suture as with the tier suture. I used the through-and-through method myself until 1892, and I had certainly five per cent. hernias. Of course then I drained more than I do now, and so would expect more hernias. Tying sutures too tightly has more to do with suppuration than infection. I have not been troubled by the dead spaces spoken of, nor have I had any trouble with hemorrhage after tying with catgut.

Dr. F. H. Davenport showed a

FIBROID, TEN CENTIMETRES IN DIAMETER, REMOVED BY MYOMECTOMY.

Recent Literature.

The International Text-Book of Surgery. By American and British Authors. Edited by J. Collins Warren, M.D., LL.D., Professor of Surgery in Harvard Medical School; Surgeon to the Massachusetts General Hospital, and A. Pearce Gould, M.S., F.R.C.S., Surgeon to the Middlesex Hospital; Lecturer on Practical Surgery and Teacher of Operative Surgery to the Middlesex Hospital Medical School, etc. Vol. I, General and Operative Surgery. Pp. 947, with 458 illustrations in the text and nine full-page plates in colors. Philadelphia: W. B. Saunders. 1900.

This work is intended to furnish a reliable text-book of surgery, one "untrammelled by the many traditions of the past, and which presents with due discrimination the results of modern progress." Recognizing that the broad field of special surgery has made it practically impossible for any one writer, however brilliant, to be omniscient, the editors (who, as is well known both in this country and abroad, are men exceptionally well qualified to prepare such a work) in order to accomplish their purpose have obtained the assistance of others, notably experts in their special departments of surgery. These are men of wide experience and international reputation. They have contributed extensively.

The book is to be published in two volumes. Vol. I is now placed at the disposal of the profession and others who may be interested. It treats of General and Operative Surgery. Vol. II is to contain the chapters devoted to Special or Regional Surgery.

Vol. I, the one just published, is an exceedingly handsome, attractive book. Our space will not permit us to enumerate in detail the subjects included in its table of contents. The usual ones appear and also some unusual ones, such as Surgical Pathology of the Blood, Constitutional Reaction to Wounds and Infections, Surgery of Muscles, Tendons and Bursæ, of the Heart and Blood-Vessels, etc. Some subjects are treated with much more care and detail than is usually observed, for example, the chapter of 25 pages on Anesthetics and Surgical Anesthesia.

The articles as a rule present the essentials of the special subject treated in a clear, concise manner. They are systematically written. The subdivisions are readily distinguished from the general text by the lettering at the commencement of each paragraph, a method which greatly facilitates rapid reference. The book is extensively indexed. The illustrations are abundant, well chosen and enhance greatly the value of the work.

The chapters are often excellent résumés of the more detailed publications of their authors. The present status of some of the more recently investigated lesions is well described, for example, "traumatic" and "congenital" dislocation of the hip. The book is a thoroughly modern one. As is unavoidable, when so much has to be condensed into a limited space, some chapters are very concisely written; but the general ground has been well covered, the main facts have been presented, and the student can be sure that, when he has thoroughly studied the volume and has familiarized himself with its contents, his general knowledge of modern surgery will be up to date. The presswork of the book is highly satisfactory. The second volume will be awaited with interest.

Brain in Relation to Mind. By J. Sanderson Christison, M.D., author of "Crime and Criminals"; formerly of the New York City Asylum for the Insane, etc. Pp. 143, illustrated. Chicago. 1899.

The author has tried to present in this book what is known of the relationship of the brain to the mind, and give the facts indicating the present status of our knowledge. He has tried to state facts, rather than present arguments, and to establish those facts by the necessary references. Cerebral development functions, the significance of brain contour and size, and mind localization are among the subjects discussed. The book deals with a subject of interest to the physician, the lawyer, the theologian, and the psychologist.

A Case of Leprosy. — A young man, twenty-two years of age, who recently arrived in New York from Bridgetown, Barbadoes, was discovered by the examining surgeon of the Immigration Bureau to be suffering from leprosy, and was immediately ordered back to the steamship on which he had come as a steerage passenger, for deportation.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, MARCH 8, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.

THE CONTROVERSY AS TO THE NUTRITIVE VALUE OF ALCOHOL.

THE results of some recent experiments conducted by Dr. Atwater, of Wesleyan University, upon the nutritive value of alcohol, have awakened anew a vigorous controversy upon one of the important questions of education, the teaching in regard to alcohol in the schools.

Dr. Atwater claims in his published statements that the results of his experiment prove that alcohol is a food, and that therefore the teaching of pulpit and schools that it is not a food is an error, and should be discontinued. The adherents of temperance and of the present method of teaching in regard to alcohol have replied in several letters, and finally by a pamphlet called "An Appeal to Truth," stating that Dr. Atwater's experiments do not prove that alcohol is a food either in the common sense of the term, as understood by people generally and used in books of hygiene, or in the particular sense in which the author uses it, as a food entitled to rank as sugar, starch and fat, and that, therefore, his experiments should have no effect upon the teaching.

The question in dispute in this case is not the actual value of alcohol as a food, but is solely whether or not the conclusions which Dr. Atwater draws from his results are justified by these results.

These conclusions, stated in Circular No. 357, November 6, 1899 (U. S. Department of Agriculture, Division of Publications), are:

(1) That the alcohol was almost completely oxidized in the system.

(2) In the oxidation all of the potential energy of the alcohol burned was transformed into heat or muscular energy.

(3) That the alcohol protected the material of the body from consumption just as effectively as corresponding amounts of sugar, starch or fat.

If we examine the experiments from which these conclusions are deduced, contained in Bulletin No. 69 (Office of Experimental Station, Department of Agriculture), in regard to each of the three conclusions separately, we find that conclusions Nos. 1 and 2 are perfectly tenable and justifiable on the basis of these experiments, but that No. 3 is not thus justifiable. The data given in the Bulletin show conclusively that alcohol is oxidized in the body and that the potential energy of this alcohol is transformed to heat or energy of some other kind. It fails, however, to show that the alcohol protects the body materials from consumption equally with sugar or starch or fat. In fact, this data shows an actual loss of nitrogen in the experiments in which alcohol was used, proving a consumption of body material under these conditions. We are thus forced to conclude from an examination of the facts that the authors of "An Appeal to Truth" are correct in their claim that Dr. Atwater's experiments do not justify his statement that alcohol is a food entitled to rank as sugar, starch or fat in its effect in protecting the body materials from consumption. In fact, the experiments as they stand prove the contrary.

Are they justified also in their claim that his experiments fail to justify him in his conclusion that alcohol is a food in the ordinary sense of the term, a conclusion implied in his statements in the report which refer to alcohol "with other food materials"? We think that they are so justified.

The two conclusions in regard to the metabolism of alcohol which Dr. Atwater's experiments did warrant, namely, that alcohol is oxidized in the body, and that the potential energy of the alcohol is there liberated, do not by any means prove that alcohol is a food in the ordinarily accepted sense of the term "food." To demonstrate this fact, it must be proven that the sum total of the effect of the ingested alcohol is useful rather than harmful in the maintenance of the animal economy. And this Dr. Atwater has not proven. And it has not yet, as far as we know, been demonstrated by any experiments. In fact, the weight of experimental evidence at the present time is decidedly against such an assumption. Thus the experiments made upon large bodies of men under conditions of sustained labor, as those conducted in the English, German and American armies, prove to us that the effects of the use of alcohol, in the amounts ordinarily spoken of as "moderate," make the soldier less rather than more fit for work, and decrease rather than increase the amount of energy which he can put forth under given conditions. That the use of alcohol in large amounts is harmful no one doubts.

It is possible that it may some day be proven that the effect of very small amounts of alcohol upon the economy is such as to entitle it to be considered as a food. But it has not yet been so proven. And until it is, the advocates of the temperance education are quite justified in any protest which they may make against the assumption that alcohol is a food.

As we have said, the whole truth in regard to the action of alcohol in the body or the question of its nutritive value is not known. If it is at some future

time proven that small amounts have such a value, then alcohol must be classed as a food.

It must be pointed out, however, that even such a result would not entitle it to be classed as a desirable or hygienic food, which is the sense in which people in general understand the meaning of the term "food." Against such inclusion there are many weighty arguments, as, for example, the fact that the tendency to the formation of the alcohol habit from taking these small amounts is so great that the danger of its use far exceeds any possible benefits which may be derived from it.

These remarks are not intended as a justification of *all* the teaching upon the subject of alcohol which has up to the present time been advocated or employed by the agents of temperance education in the schools. We wish merely to point out that, in regard to the teaching upon this particular question, as to whether or not alcohol is a food, their position has not yet been successfully controverted by scientific evidence. Whether the present teaching upon this point is the wisest under present conditions of knowledge is another question.

It is our personal opinion that the wisest course at present would be to base the prohibition of alcohol advocated in the teaching upon the fact that alcohol is an undesirable substance, the use of which in any capacity in health is quite unjustifiable under the laws of hygiene, rather than upon the statement that it is not a food or the unqualified statement that it is a poison. For while the latter statements in unqualified form have, at the present time, the preponderance of scientific evidence in their favor, still our knowledge in this regard is not complete. The former statement, however, is based upon facts and arguments so established that it may be regarded as true beyond the shadow of a doubt.

TWO VOLUMES OF "PROCEEDINGS."

The growth of medical knowledge, unfortunately, does not keep pace with the growth of medical literature. Journals are multiplying beyond all necessity and demand, and each special branch has also its special organ. In addition to this, medical societies are increasing in number, as representing certain sections of the country or special interests, and hence is born another species of medical literature, the proceedings or transactions. Of these we now have two bulky volumes before us, one the *Proceedings of the American Medico-Psychological Association* for 1899, and the other Volume 1 of the *Transactions of the Mississippi Valley Medical Association* for the same year. The first is, of course, a collection of special papers relating to the problems and interests of psychiatry. A notable contribution is the one by Dr. Peterson, of New York, on methods of study and improved facilities in our large cities. He speaks highly, and with reason, of the comprehensive laboratory inaugurated by Van Giesen for the study of mental disorders, and strongly advocates the establishment of what he calls "psychopathic hospitals" (the term is hopelessly bad) for the reception of the acutely insane. The volume should be of much interest to psychiatrists, and of some interest to all of us, but the papers, with few exceptions, lack the stamp of real originality and personal research.

The *Transactions of the Mississippi Valley Medical Association* is a very different sort of a book. It has a wide scope of subjects, under forty-seven titles, — papers of personal experience in great part. No doubt, for members of the Association, such a collection of uncritical papers has a certain interest and value; for the rest of the world, we confess to the conviction that it adds to the bulk but not to the worth of existing medical literature. It is usually a misfortune that an author writes a paper for such a volume, with the consciousness that it is first to be read at a meeting. The tendency to deviate from direct statement into the vagaries of fine writing is apparently quite irresistible, under such circumstances. It is hard for some of us to learn that in dealing with a subject of scientific character, an absolutely direct style of expression is alone admissible.

MEDICAL NOTES.

Pollution of Water Supplies. — A bill has been introduced in Congress relating to the pollution of water supplies. The bill provides for an appropriation of $3,000 to enable the Marine-Hospital Service, under the direction of the Secretary of the Treasury, to investigate the sources of contamination of rivers and other natural sources of water supply where the sanitary condition of the people of more than one State or Territory or the District of Columbia is affected, the first investigation under the provisions of the bill to be made of the Potomac River. At the instance of the Game and Fish Protective Association of the District of Columbia an amendment has been adopted by the committee providing for an appropriation of $2,000 to enable the Commissioner of Fish and Fisheries to investigate and report on the effects of pollution in interstate rivers upon the fish, fry, spawn, fish-food, plankton and riparian vegetation of such waters. It is of interest in this connection to note that Massachusetts alone, through its Board of Health, expends $30,000 yearly for the prevention of river and stream pollution. The foregoing bill savors somewhat of a union between the Marine-Hospital Service and the Game and Fish Protective Association, to be used by the former as an entering wedge to larger things.

Antivivisection Estimates of the Value of Serums. — While the Treasurer of the New England Antivivisection Society is informing a committee of the Massachusetts Legislature that Haffkine's antiplague inoculations have been proved to be worthless, the Indian Plague Commission is reporting to the Under-Secretary of State for India, that they "consider Mr. Haffkine to have performed a great life-saving

work in the face of almost insuperable difficulties." They express their sense, after very careful investigations, of the importance of the method which Mr. Haffkine has devised and of the results which have been achieved by it. As the same official of the Anti-vivisection Society informed the same legislative committee that the only value of antidiphtheritic serum resided in the carbolic acid by which it is preserved, and that, notwithstanding the proved worthlessness of the antitetanus serum, doctors go on just the same injecting it into the brains of their patients, thoughtful and serious people may afford to disregard his statements and his conclusions.

THIRTEENTH INTERNATIONAL MEDICAL CONGRESS. — A circular has been issued by the General Secretary of the Congress, giving information to members who propose to attend. Each member has the privilege of participating in the work of any of the sections. Reports of proceedings will be sent to each member, but only in that section to which he, personally, belongs. In addition to this, each member will receive later, without charge, a volume containing a general résumé of the work of the Congress; also a volume giving a complete account of the general assemblies. Other volumes may be purchased, if desired.

ANOTHER ANTIVIVISECTION BILL. — The indefatigable Dr. Gallinger has introduced in the United States Senate a new bill which reads as follows: "That no person shall perform upon the body of any human being in the District of Columbia any scientific experiment involving pain, distress or risk of life and health, whether by administration of poisonous drugs for the purpose of ascertaining their toxicity, by inoculating the germs of disease, by grafting cancerous tumors into healthy tissues, or by performance of any surgical operation for any other object than the amelioration of the patient."

UNIVERSITY MEDICAL MAGAZINE. — It has been announced that the Board of Trustees of the University of Pennsylvania has finally secured entire control of the *University Medical Magazine*, and that in the future it will be published under the auspices and with the support of the University. Heretofore the publication has been in the hands of a stock company, over which the University had no control. Dr. Charles H. Frazier has recently been appointed editor.

NEW ORLEANS POLYCLINIC. — A report has been circulated that the New Orleans Polyclinic has been suspended on account of small-pox in New Orleans. This is incorrect. The small-pox situation in New Orleans has at no time justified any apprehension on the part of students attending the Polyclinic or on the part of those who might wish to do so.

THE GERMAN CONGRESS OF INTERNAL MEDICINE. — The eighteenth German Congress of Internal Medicine will be held at Wiesbaden, April 18th to 21st. Professor von Jaksch, of Prague, is the president. A discussion on the "Treatment of Pneumonia," is announced, and also one on "Endocarditis and its Relations to other Diseases."

TUBERCULOSIS IN FRANCE. — A bill providing for the erection of a national institution to combat tuberculosis has been introduced into the French Chamber. It is said that about 150,000 deaths annually in France are due to tuberculosis.

RETURN OF SIR WILLIAM MACCORMAC. — Sir William MacCormac, President of the Royal College of Surgeons, who has been acting as volunteer surgeon with the British Army in South Africa, has sailed for England.

APPOINTMENT OF DR. LEWELLYS F. BARKER. — Dr. Lewellys F. Barker, of the Johns Hopkins Medical School, has been appointed professor of anatomy in the University of Chicago and Rush Medical College.

HOSPITAL BEQUESTS. — Under the will of the late Siegfried R. Zunz, of Wimbledon, it is reported that the London, England, hospitals will benefit to the extent of between $400,000 and $450,000.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, March 7, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 69, scarlatina 42, measles 104, typhoid fever 15.

MORTALITY STATISTICS IN BOSTON. — The total number of deaths reported to the Board of Health for the week ending March 3d was 273, against 187 the corresponding week last year, showing an increase of 86 deaths, and making the death-rate for the week 25.7. Of this number 136 were males, and 137 females.

CHRISTIAN SCIENCE AND DEATH CERTIFICATES. — A child has recently died in Somerville, Mass., who had been treated by a Christian Scientist; he gave as the cause of death, pneumonia. The clerk of the Board of Health declined to issue the burial permit without the testimony of an accredited physician, as required by law. After considerable controversy, in which the clerk was upheld in the position he had taken, a physician was allowed to view the body, and the burial was permitted.

A CASE OF SMALL-POX AT YALE. — It is reported that a student in the Freshman Class of the Sheffield Scientific School is ill with small-pox. Very few of his classmates have been exposed to contagion, and with the precautions that have been taken, it is not expected that the disease will spread.

A CENTENARIAN. — Mrs. Abigail Kimball Garvin died in Westford, Mass., March 2d, at the age of one hundred and four years.

NEW YORK.

AN IMPORTANT DECISION. — A will case that has attracted much public interest has just been decided in

the courts. The will in question was that of Miss Annie Taylor Morgan, who is believed to have lost her life at the Windsor Hotel fire on March 17, 1899, and it has now been admitted to probate by Surrogate Thomas. The main ground of contest was that there was no proof of the death of the testatrix. The Surrogate decides that the evidence of her death, though circumstantial, was entirely sufficient. From the time of the fire until now no friend of the testatrix has seen her or heard from her. Only one witness, the Surrogate states, was willing to express an opinion that the testatrix was insane. The evidence on that point, however, amounted to little. By the provisions of the will Miss Morgan's estate is left to a god-child, and the contest was brought by her sister, from whom she had long been estranged.

Resignation of Dr. Charles McBurney. — Dr. Charles McBurney has resigned his position as attending surgeon to the Roosevelt Hospital, and the announcement is received with great regret and considerable surprise by the profession. Dr. McBurney has been identified with Roosevelt during its entire existence, and it was on account of the high esteem felt for him that the Sims Operating Pavilion, one of the most completely equipped establishments of the kind in the world, and which was erected and fitted up under his personal supervision, was added to the hospital.

Miscellany.

ANOPHELES AND MALARIA.

A valuable paper by Professor Celli, the Director of the Institute of Hygiene in Rome, has appeared in a recent issue of the *British Medical Journal*. The following comments are made editorially:

"The older observers had noted, what is indeed a part of the folk-lore of malarial districts of Europe, that malaria was most likely to be contracted about sunset and at night. *Anopheles* lies hid by day and issues forth in quest of human blood at sunset, and pursues its search through the night. Again, the old observers noted that the malarial 'miasm' was often very limited, and did not extend to any great elevation, so that residence on the top of a rock or in the highest story of a lofty house was some protection. It is known that the mosquito does not fly far from its birthplace, nor mount high in the air. Again, the older observers knew that the malarial 'miasm' was not carried by high winds, and it is notorious that the mosquito does not fly on stormy nights.

"Professor Celli thus traces the cycle, for the maintenance of which, in Italy at least, man is essential. Beginning with the great multiplication of mosquitoes at the end of June or the early part of July, it is found that some of these are infected by the malarial parasite. They convey the infection to man, thus bringing about the great increase in the number of attacks of malaria observed in July and August, but sometimes continuing into the fourth quarter of the year. During the first and second quarters of the following year the malarious cases met with are generally recurrence of the infections contracted in the third or fourth quarters of the preceding year, and it is by these recurrent cases occuring even as late as June, when the mosquito once more becomes active, that the infection is again transmitted to the insect, and a new epidemic started.

"Professor Celli observes incidentally that in Italy children are more affected by malaria than adults, and Professor Koch lays great stress upon this point, making it indeed the test of the extent to which malarial prevails in a population, since he finds evidence that adults in a malarial district having survived the infection in early youth have acquired a more or less complete immunity. This observation Koch believes may be of great importance in prophylaxis.

"Both Celli and Koch lay great stress on the part which the cultivation of rice plays in favoring the multiplication of mosquitoes. 'The more rice fields,' Koch reports, 'there are in the neighborhood of a place, and the nearer they are, the greater the abundance of mosquitoes;' and Celli observes that it is well known that 'the formation of rice fields causes the reappearance of malaria where it had become extinct, and where it already exists they are a very active focus of production.' Rice is best cultivated on low lands subject to occasional inundation, but where inundation cannot be depended upon very copious artificial irrigation is resorted to."

Correspondence.

[Special Correspondence.]

LETTER FROM PARIS.

Preparations for the Exhibition. — The International Medical Congress. — French Spleen as Manifested towards Americans and English. — To Attend or Not to Attend the Exhibition and the Congress?

Paris, February 22, 1900.

Mr. Editor: — We whose lot it is to live in Paris have been made very painfully aware during the past year that the great Exhibition of 1900 is fast drawing near; the town has been simply torn up by the roots in its preparations for the event, and life has thereby been rendered loathsome. Immense groups of buildings going up, others being pulled down, three sections of underground railways being hurried through at once, long quays being constructed on the river banks, rails being laid in many streets for electric tram-lines, two fine railroad termini being erected, the direction of some of the main sewers being altered, the Seine being bridged in several places, etc., have thrown the city into such a state of chaos as the oldest inhabitant has never witnessed, unless during the Commune, if even then. During this Exhibition, as your readers are undoubtedly aware, is to be held the Triennial International Medical Congress, and it is of this Congress that I wish to say a few words today.

As regards the general utility of these great medical conclaves I think there is practically but one opinion: nothing of real importance has ever been brought forth at any of them. This is so true that the tendency now appears to be for leading medical men to hold aloof from them, or, at any rate, only to appear *pro forma*, reserving their interesting communications for the societies and periodicals with which they may happen to be personally affiliated. This leaves the arena to the young and ambitious, who have had things pretty much their own way at the last two or three congresses. Some of the communications at Berlin and Moscow on the part of unknown members of the

profession were so utterly valueless, and such unabashed attempts at self-advertisement, as to call forth universal remark at the time, followed later on by a variety of proposals for modifying the method of holding the sittings so as to put a stop to this abuse.

Furthermore, the number of medical men with or without encumbrances who attend these gatherings appears to be steadily on the increase, so that at the more recent ones the crowd has become practically unmanageable. Whence the occurrence of a great deal of sore feeling and wounded susceptibilities, the local committees being incapable of singling out the grain from the chaff, and powerless to pay proper attention to the lights of the profession, even when discovered, owing to their necessarily restricted numbers. If this has been the case in what may be called uneventful years, and in such relatively unfrequented centres as Berlin, Moscow and Rome, what are we to expect in an exhibition year, and in such a universal rendezvous as Paris? The thought of the herd of physicians that will congregate here next summer makes one positively shudder.

If, now, to this we add that the unfortunate committee has appointed as the date of the Congress August 2d to 9th, a time of year when the atmosphere of Paris, without reaching the lofty summits of heat with which many Americans are familiar, is absolutely dead and filled with stenches, and also that the majority of the attendance will be composed of the great unwashed populations of the Continent, to whom an open window is the height of abomination, and who will crowd the stifling assembly rooms and then sit and sweat and sweat and sweat again, the prospect for the fresh-air, English speaking delegates to this Congress may be realized.

I see on the north bank of the Seine, in full exposure to the sun, a light shell of a building of great size, marked: *Palais des Congrès*. I have not heard whether the intention is to hold the Medical Congress in this building, but, if such is the plan, all I can say is that the members attending will have my profoundest commiseration and that there is, at any rate, one practitioner in this city who will be conspicuous by his absence. Under an August sun that edifice will be a furnace.

Let us consider for a moment what can be the expectations of the average American physician in attending this Congress — I mean those who may intend to come unofficially and not as delegates. I think that a certain number will look on the Congress as a sight to be seen with the other sights of Paris during their summer trip abroad. Others, and this appears to me to be the only real purpose that can be attained at these congresses, will come to it to extend their circle of acquaintances, to meet many confrères with whom they are in correspondence and of whom they hear from mutual patients, or to see the celebrated men whose publications they read and in whose work they may be specially interested. Others, still, will come to look into medical Paris of to-day, to visit the hospitals, clinics, laboratories and museums, and to see what ideas they can discover worth noting and transplanting to America. Will the pains of the latter be rewarded; will the results they can expect to obtain be worth the trouble, expense and loss of time the journey will entail?

Unfortunately, I am obliged to give a decidedly negative answer to these questions. No; there is not enough for American physicians to learn here to warrant the undertaking; any one having the time and means to take the trip, if for medical purposes only, can accomplish far more by visiting Vienna or Berlin than by coming to Paris. It is positively melancholy that a great medical centre like Paris, which, no further back than thirty or forty years ago, led the world, should now occupy the position it does. The foreign *clientèle* of the French medical schools is now composed almost exclusively of the Southern and far Eastern races: South America, the Spanish Peninsula, Greece, Egypt, Turkey, Roumania, Southern Russia and Siberia. The more progressive and highly cultured countries are conspicuous by their almost total absence, and no further proof then is needed to show the superiority of the other great medical centres over Paris.

I do not propose to go into the details of medical teaching and practice in Paris in this letter; they would take up too much space, and I hope to treat this point in full on some future occasion. But in general terms I can say that all is anarchy *in rebus medicinæ* in Paris. There are brilliant exceptions, naturally. Many of the professors are most gifted men; a few of the clinics are practically up to date (though in such cases this is generally due to altogether private efforts on the part of the *chef*); one at least of the museums is unique, and on several hospitals a great deal of money has been spent lately, with results not proportionate to the expenditure. But on the whole, the American will meet with more surprises and disappointments than with anything else.

There are, as I have said, many excellent men as professors; the clinical material has simply no limits; the facilities are all that one can ask, and there are plenty of funds. Yet the net result produced is so poor as to be positively astounding. The cause of this miscarriage of effort appears to me to be the fact that medical affairs in France are a monopoly held by the Government, and are run on the lines of a great "administration," like any other "administration," such as the post-office, for instance. They are entirely managed by officials, who in this instance, as in all others in this country, throw a withering blight on whatever they are brought in contact with. Competition is absolutely excluded, there being no degrees conferred except by the Government Faculties, of which there are only half a dozen for the whole of France. Finally, one is forced to admit the existence in the French either of inability to grasp the value of certain things they see in hospitals abroad, or else of deliberate unwillingness to make any innovation that has not its point of departure in their own country. For instance, how is it possible otherwise to comprehend a national medical system in a great country at the end of the nineteenth century in which the hospital trained nurse, as evolved in England and America, is otally unknown?

In conclusion, I wish to allude briefly to a somewhat delicate side of the question of American attendance at the Paris Congress this summer. Politics are not at home in the columns of a medical journal — that I know; still, there are some things that one *has* to say, and the one I now have on my mind is that I shall be very sorry to see my American confrères contribute to the success of this Congress.

It is evidently difficult to make people who live at a distance in America appreciate what the feeling of the French is toward the English-speaking races, or what occurred here during our war with Spain, and is now occurring again while the English are at war in South Africa. There is something about the English-speaking peoples that creates a profound aversion in the French mind. This they admit themselves with perfect candor. Under ordinary circumstances, when the political atmosphere is relatively calm, this aversion is kept more or less out of sight, and is covered over with a superficial veneer of ceremonial politeness. The English or American who during such periods visits France, and is only thrown in contact with the French in a casual way, is apt to depart *charmed* with French politeness and affability, and I for one do not blame him. The French are simply *passed masters* in this art, and although I have lived here a great many years, am beginning to understand my Frenchman fairly well, and am quite on my guard, it is even now *almost impossible* for me to avoid being taken in by the Frenchman's *apparent* cordiality and courtesy.

But let some great political cataclysm occur — the war with Spain, Dreyfus case, or the present war in South Africa — you at once see the Frenchman *as he really is*. The superficial shell of good manners behind which he has been concealed falls from him, and you behold a man whose hatred of everything English (in which he includes everybody who speaks the English tongue) is rendered doubly bitter by being long contained, and generally very ignorant of all that concerns the object of his hatred.

Such an outburst of gratuitous insults, venomous lies and

outrageous attacks of all sorts against Americans as filled the French press during our war two years ago must be almost unparalleled; and now that the process is being repeated against the English in connection with the South African War, I am almost led to believe what I have several times heard said, that the animosity of the French toward the English is more intense than their feeling against the Germans.

Let me merely give one or two instances of the violence of this feeling, and the undisguised way in which it has been manifested of late, so that no one will think I am exaggerating.

During our war I, personally, saw a Frenchman come up behind an English lady seated in a cab and try to knock her sailor hat off, the endeavor only failing by the hat being held by long pins run through her hair; this attempt caused great satisfaction to those who saw it, and to a policeman a few yards away, who made no step to interfere.

During the Spanish War, Dreyfus case and present African War, it has hardly been safe for an English-appearing woman to go on the streets of Paris unaccompanied; she is liable at any moment to have the epithet, "*sale Anglaise*," hurled in her face, as has happened any number of times to ladies whom I know — once recently on the Champs Elysées, in the afternoon, by a soldier in uniform.

The last few weeks have seen the appearance of a new form of ventilating the French spleen. Placards have been posted in different parts of Paris, reading: "*Mort aux Anglais.*" I saw a paper being sold along the boulevards the other day, that had those words printed in an immense heading running across the page, so that every one could read them at a distance. Finally, on entering a suburban train recently I found the carriage sides plastered with little printed labels bearing the same amiable inscription.

These are only samples of the electricity there is in the air here, and of the true feelings of the French toward us. It is quite possible that the anti-English campaign will be lulled during the Exhibition, and that the more usual appearance of affability will come to the front again, as the French are not *quite* easy in their minds about this Exhibition. They know that their best foreign customers are the English and Americans, and certain warning notes have already appeared in their papers about not carrying their insulting tirades and caricatures too far.

But whatever they do, their *true* feeling toward us is as I have described it. Americans should know what it is, and should bear in mind their scurrilous behavior to us during our war, and what they would have done in the way of intervention if they had not felt Great Britain in their way.

Let the members who do attend this Congress take the greeting of the French at its *real* value, and not at all for what it *appears* to be worth. SPECTATOR.

STREET PAVEMENTS.

BOSTON, March 3, 1900.

MR. EDITOR: — Permit me a few words in reply to the editorial comments on my communication in the last number of the JOURNAL. I did not mention the names of Dr. Durgin, Professor Allen and Mr. McClintock, because I was not sure of them and therefore spoke of these gentlemen collectively as experts, thinking that I was thus showing due regard to their opinions. As to Mr. McClintock, he gave an account of macadam roads, but said nothing, I believe, about asphalt *pro* or *con*. The letters you publish I had the pleasure of hearing read at a meeting before the Park Commission a few years ago. They present strong evidence, but it is only just to say that the Brick Paving Company also produces many testimonials and statements as to the superiority of brick. A book on this subject with the title of "Brick Roadways" was distributed some years since, and doubtless many of your readers possess it. A gentleman who lives on Arlington St., opposite the portion laid with brick, tells me that this makes an admirable pavement, and there are abundant proofs that it can be made to wear well.

Horses require no special shoe to travel over it, and water can be used freely on it. Asphalt is certainly a boon to the street superintendents, who find a company ready to put down a roadway and keep it in repair, but it is not so great a boon to the public, in a changeable climate like ours. Its disadvantages are not imaginary, but real and easy to verify. London may be called as a witness. London has tried asphalt and returned to wood pavements, preferring comfort to durability. Regarding the use of wood, I find in a recent magazine this statement.[1] "Improved wood pavements are a luxury. They have many points of superiority over asphalt. They are so considered in London, where their use is continued, although they require renewal oftener than asphalt, and much more often than granite. They will undoubtedly be used more frequently in this country, when the people are willing to pay the additional cost for the quiet and freedom from dust, and from the somewhat disagreeable glare of asphalt." As for local testimony against asphalt, there was a letter published in the *Boston Transcript* of February 24th, by John F. Ryan, M.D., which is worthy of attention.

Yours truly, S.

AN EXCURSION TO THE PARIS EXHIBITION.

HARTFORD, CONN., March 5, 1900.

MR. EDITOR: — An excursion to the Paris Exposition and the International Medical Congress, to be confined exclusively to physicians and their families, has been organized in the West. Two steamers have been chartered, one the *City of Rome*, and the other the *Nebraska*. They will sail from New York on June 30th, and return in forty-five or fifty-two days, according to the wishes of the excursionists. A New England Committee has been appointed to solicit physicians in this part of the country who would like to make this excursion. The expenses, including hotels, carriage drives, etc., also including a tour through Scotland, Ireland, England, and Belgium, will be from $260 to $285. The return can be made any time during the year. A large number of physicians are arranging to go on this excursion, which promises to be one of the most enjoyable of the year. The New England Committee are H. O. Marcy, M.D., Boston, Mass.; E. R. Campbell, M.D., Bellows Falls, Vt., and T. D. Crothers, M.D., Hartford, Conn. Each one of these gentlemen would be pleased to give all information, and to send circulars of the itinerary of this trip to any who may wish to join it. Over 200 have already been booked, and the prospect is that both ships will be crowded. It is necessary that any person wishing to join this excursion should communicate at once with the Committee.

Very truly yours,
T. D. CROTHERS, M.D.

THE DISCOVERY OF THE BACILLUS OF INFLUENZA.

PORTLAND, MAINE, March 5, 1900.

MR. EDITOR: — In your issue of March 1st is a review of Dr. W. H. Park's "Bacteriology," the review being chiefly a list of "errors or special defects." In this list appears the following finality: "On page 30 Canon is erroneously credited with a part in the discovery of the bacillus of influenza."

It may be now within the knowledge of your reviewer that Canon is a pretender; but in Berlin, in 1892, Canon was the flushed and happy recipient of congratulations for a discovery simultaneous with that of Pfeiffer.

Very truly yours,
ADDISON S. THAYER, M.D.

[1] Appleton's Popular Science Monthly, March, 1900.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, FEBRUARY 24, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Typhoid fever.	Diphtheria and croup.	Measles.
New York	3,654,594	1671	608	22.80	27.96	.60	3.84	3.60
Chicago	1,619,726	—	—	—	—	—	—	—
Philadelphia	1,366,832	—	—	—	—	—	—	—
St. Louis	622,000	—	—	—	—	—	—	—
Boston	539,416	227	68	19.36	21.12	—	3.96	.44
Baltimore	506,389	225	74	17.60	29.92	.44	4.84	.44
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	119	39	32.68	13.76	9.46	2.58	.86
Washington	277,000	—	—	—	—	—	—	—
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	77	36	31.20	31.20	—	—	12.98
Nashville	87,754	34	11	20.58	32.34	—	—	—
Charleston	65,165	33	11	12.12	24.24	—	—	—
Worcester	111,732	39	11	20.48	12.80	—	2.56	—
Fall River	103,142	51	36	5.88	19.60	—	1.96	—
Cambridge	92,820	40	8	27.50	20.00	—	5.00	—
Lowell	90,114	34	11	14.70	23.52	2.94	2.94	—
New Bedford	70,511	28	7	14.28	7.14	—	—	—
Lynn	68,218	20	5	—	20.00	—	—	—
Somerville	64,394	14	3	35.86	14.66	—	—	—
Lawrence	59,971	35	20	25.74	14.30	—	8.58	—
Springfield	58,268	27	9	18.50	18.50	—	3.70	3.70
Holyoke	44,510	11	7	27.27	36.36	—	9.09	—
Brockton	38,759	8	—	25.00	12.50	—	—	—
Salem	37,723	18	1	5.55	11.11	—	5.55	—
Malden	34,421	4	1	—	25.00	—	—	—
Chelsea	34,235	16	6	18.75	—	—	12.50	—
Haverhill	32,651	13	3	7.69	15.38	—	7.69	—
Gloucester	31,428	—	—	—	—	—	—	—
Fitchburg	30,523	9	1	—	33.33	—	—	—
Newton	30,461	4	2	—	25.00	—	—	—
Taunton	28,527	12	—	16.66	16.66	—	—	—
Everett	28,102	5	2	—	60.00	—	—	—
Quincy	24,578	4	2	—	25.00	—	—	—
Pittsfield	23,421	—	—	—	—	—	—	—
Waltham	22,791	3	1	—	—	—	—	—
North Adams	21,583	4	1	25.00	25.00	—	—	—
Chicopee	18,316	7	3	—	—	—	—	—
Medford	17,190	5	—	—	20.00	—	—	—
Newburyport	15,026	5	—	20.00	—	—	—	—
Melrose	14,721	4	—	25.00	25.00	25.00	—	—

Deaths reported 2,817; under five years of age 980; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 584, acute lung diseases 713, consumption 288, diphtheria and croup 103, measles 74, diarrheal diseases 37, typhoid fever 34, scarlet fever 27, whooping-cough 25, erysipelas 16, cerebrospinal meningitis 10.

From diarrheal diseases New York 20, Pittsburg 5, Providence 4, Charleston and Fall River 3 each, Baltimore 2. From scarlet fever New York 17, Boston 5, Baltimore, Providence, Somerville, Lawrence and Gloucester 1 each. From whooping-cough New York 16, Boston 4, Pittsburg 2, Providence, Nashville and Lawrence 1 each. From erysipelas New York 12, Boston, Cambridge, New Bedford and Somerville 1 each. From cerebrospinal meningitis New York 5, Boston and Baltimore 2 each, Somerville 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending February 10th, the death-rate was 22.8. Deaths reported 5,082: acute diseases of the respiratory organs (London) 425, whooping-cough 138, diphtheria 115, measles 82, diarrhea 39, scarlet fever 37, fever 34, small-pox (Hull 3, Leeds 1) 4.

The death-rates ranged from 12.6 in Cardiff to 35.1 in Preston: Birmingham 22.0, Bradford 21.8, Bristol 19.4, Gateshead 17.6, Hull 25.8, Leeds 29.4, Leicester 18.3, Liverpool 31.8, London 20.4, Manchester 28.0, Newcastle-on-Tyne 25.4, Nottingham 16.5, Sheffield 26.1, Swansea 15.8, West Ham 14.4.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending February 17th, the death-rate was 25.8. Deaths reported 5,750; acute diseases of the respiratory organs (London) 527, whooping-cough 138, measles 132, diphtheria 102, fever 33, scarlet fever 31, diarrhea 31, small-pox (Hull) 2.

The death-rates ranged from 14.3 in Brighton to 34.8 in Preston: Birmingham 32.4, Bradford 18.4, Cardiff 15.8, Gateshead 30.5, Hull 24.7, Leeds 28.4, Liverpool 25.7, London 22.9, Manchester 37.2, Newcastle-on-Tyne 23.4, Nottingham 22.6, Portsmouth 25.7, Sheffield 26.5, Sunderland 26.5, West Ham 19.1.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MARCH 2, 1900.

F. W. OLCOTT, passed assistant surgeon, detached from the Naval Recruiting Rendezvous, Detroit, Mich., and ordered home and to wait orders.

J. A. MURPHY, assistant surgeon, ordered to the Pensacola Navy Yard.

W. F. ARNOLD, passed assistant surgeon, detached from the Pensacola Navy Yard and ordered to the Naval Hospital, Norfolk, Va., for treatment.

D. H. MORGAN, assistant surgeon, ordered home from the Asiatic Station and to wait orders.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING MARCH 1, 1900.

BROOKS, S. D., surgeon. To proceed to Bar Harbor, Me., as inspector. March 1, 1900.

PERRY, T. B., passed assistant surgeon. To proceed to Buckhannon, W. Va., for special temporary duty. February 26, 1900.

WOODWARD, R. M., passed assistant surgeon. Granted leave of absence for thirteen days from April 16th. February 26, 1900.

COBB, J. O., passed assistant surgeon. To proceed to Folsom and Catskill, N. M., for special temporary duty. February 27, 1900.

YOUNG, G. B., passed assistant surgeon. Granted leave of absence for one day. February 26, 1900.

TABB, S. R., assistant surgeon. To proceed to Fernandina, Fla., as inspector. February 24, 1900.

VON ECKDORF, R. H., assistant surgeon. To proceed to Atlanta, and report to the Governor of Georgia for temporary duty. February 24, 1900.

NEWBERRY, WALTER, hospital steward. Relieved from duty at the Tortugas Quarantine Station and directed to proceed to Mobile, Ala., and report to the medical officer in command for duty and assignment to quarters. March 1, 1900.

BECK, J. E., hospital steward. Upon being relieved from duty at Mobile, Ala., to proceed to San Francisco, Cal., and report to medical officer in command, for duty and assignment to quarters. March 1, 1900.

HOLT, E. M., hospital steward. To proceed to Boston, Mass., and report to the medical officer in command, for duty and assignment to quarters. February 28, 1900.

APPOINTMENT.

EDWIN M. HOLT, of Pennsylvania, appointed as junior hospital steward. February 24, 1900.

THE SAMUEL D. GROSS PRIZE.

ONE THOUSAND DOLLARS.

No essay which the Trustees deemed worthy of the prize having been received on January 1, 1900, they hereby announce that the prize will be awarded on October 1, 1901.

The conditions annexed by the testator are that the prize "shall be awarded every five years to the writer of the best original essay, not exceeding one hundred and fifty printed pages, octavo, in length, illustrative of some subject in surgical pathology or surgical practice, founded upon original investigations, the candidates for the prize to be American citizens."

It is expressly stipulated that the competitor who receives the prize, shall publish his essay in book form, and that he shall deposit one copy of the work in the Samuel D Gross Library of the Philadelphia Academy of Surgery, and that on the title page it shall be stated that to the essay was awarded the Samuel D. Gross Prize of the Philadelphia Academy of Surgery.

The essays, which must be written by a single author in the English language, should be sent to the "Trustees of the Samuel D. Gross Prize of the Philadelphia Academy of Surgery, care of the College of Physicians, 219 S. 13th St., Philadelphia," on or before October 1, 1901.

Each essay must be distinguished by a motto, and accompanied by a sealed envelope bearing the same motto and containing the name and address of the writer. No envelope will be opened except that which accompanies the successful essay.

The Committee will return the unsuccessful essays if reclaimed by their respective writers or their agents, within one year.

The Committee reserves the right to make no award if the essays submitted are not considered worthy of the prize.

W. W. KEEN, M.D.,
J. EWING MEARS, M.D.,
J. CHALMERS DACOSTA, M.D., } *Trustees.*

RECENT DEATH.

WILLIAM EDWARD WAMSLEY, M.D., of Brooklyn, N. Y., died on February 23th, at the age of forty-five years. He was graduated from the Medical Department of the University of the City of New York in 1877.

Original Articles.

INJURIES ABOUT THE SHOULDER AT BIRTH.[1]

BY J. S. STONE, M.D., BOSTON.

I HAVE been much interested in the injuries and deformities about the shoulder which are seen not infrequently in the clinics at the Children's and Infants' Hospitals. Most of these cases come under the general head of obstetrical injuries, and in most of them I have become convinced, partly from observation and partly from the rather scanty and very contradictory literature on the subject, that injury to the brachial plexus is by far the most important factor, while direct injury to bone and joint is of only secondary importance.

It has long been recognized that obstetrical paralysis is of Erb's type, that the deltoid is the muscle most seriously affected, and that the other muscles paralyzed are the supra- and infra-spinatus, teres minor, biceps, and brachialis anticus, together with the supinators. In some of the severer cases paralysis of some of the extensors of the wrist, or more especially of the fingers, also occurs.

All of the paralyzed muscles are supplied by the circumflex, suprascapular, musculocutaneous, and musculospiral nerves, including with the last its branch, the posterior interosseous. Of these nerves the circumflex, suprascapular and musculocutaneous arise entirely from the fifth and sixth cervical roots. In obstetrical paralysis these nerves are most seriously affected and every muscle supplied by them is usually paralyzed, excepting only the coracobrachialis, which is also supplied in infancy by a separate branch derived from the seventh cervical root.

The only other nerves which arise regularly from the fifth and sixth cervical roots are those to the scaleni, to the rhomboids, and to the subclavius, the posterior thoracic, a part of the external anterior thoracic, a very small part of the median, and the upper and lower subscapular, together with a small part of the musculospiral. Of these nerves the fibres which go to supply the scaleni, the rhomboids and the subclavius, and the fibres going to the posterior thoracic, leave the roots of the plexus almost immediately after their exit from the spinal canal and before the roots have joined to form the cords of the plexus. Furthermore, all of these nerves take a decidedly different course from the other nerves of the plexus. They do not go outward toward the shoulder. The pectoral and the subscapular muscles are supplied only in part by nerve fibres arising from the two upper roots.

As to the causation of the paralysis, I will mention, first, a theory which has been held somewhat in Germany, and which has been put forward in this country by Burr.[2] It is, in brief, that the lesion is a hemorrhage into the anterior horns of the cord, due to the congestion arising during birth. Burr argues in favor of this theory that sensation is unimpaired. His opponents reply that in infants this is an extremely fallacious sign, that complete recovery from an anterior poliomyelitis is rarely, if ever, seen, and that it is extraordinary that such a lesion should always occur at one particular spot. Furthermore, as Carter [3] points out, injury to the fifth and sixth cervical roots at or before their exit from the spinal canal may be excluded by the fact that the serratus magnus and the rhomboids, though supplied by nerves leaving these roots very soon after their exit from the canal, are never paralyzed. In other words, the lesion must be at a point below the origin of the fibres going to the posterior thoracic, to the rhomboids, and scaleni.

The other theories of the causation have been many. The theory of direct pressure on the plexus in the side of the neck, or axilla, by the blade of the forceps, the finger, or the hook, has been thoroughly discredited by the work of Carter, and more lately by Fieux,[4] among others. As Fieux puts it, whether the delivery be spontaneous, or whether extraction of the shoulders is necessary, whether coming on after the use of forceps or after a breech delivery, Erb's point is always pressed upon, and in one case by the posterior edge of the clavicle, in another by the fingers, in another by the edge of the forceps blade. Explanations of this sort obviously presuppose too much.

This brings up a point in regard to the etiology, on which there has been considerable discussion, the theory that the paralysis is due to a pinching of the plexus at Erb's point between the posterior edge of the clavicle and the first rib in cases in which the shoulder is carried far back. Some hold that the pinching of the plexus occurs between the clavicle and the transverse processes. These views are held by Oppenheim, Gault, Roulland, Budin, and of late have been advanced in Boston by Walton,[5] after anatomical study of a fetus at term, and more lately still by Schoemaker.[6] This pressure of the clavicle against the first rib, or the transverse processes, is an anatomical possibility. It means, however, that the shoulder must be carried considerably downward and very far backward to a degree which is at least not likely to occur during childbirth, although the theory that the pinching results from the rotation of the head, with the anterior shoulder hung up on the pubes, is attractive.

In the dissections on six babies which I have made the anterior curve of the clavicle gave ample space for the plexus not to be crowded. My conclusions agree absolutely with what I have since learned Fieux had done, but with which Schoemaker does not entirely agree; work bearing out in every way the theory ably set forth by Carter, that the paralysis is due to nerve stretching, and, in extreme cases, to nerve tearing.

The plexus arises from the fifth, sixth, seventh and eighth cervical, and first dorsal, nerves. If the shoulder is lowered it is plain that the upper cords must be stretched more than the lower, because the lower have normally a more nearly horizontal course. This is entirely confirmed on the cadaver. The upper two roots become as tight as bowstrings when the shoulder is lowered, while the lower three remain perfectly lax until the upper cords are severely stretched, or even completely ruptured. A pull down on the shoulder of about fifteen pounds is sufficient to break the upper roots when the plexus alone holds the shoulder up. A pull of about forty-five pounds, or three times as much, does the same thing when every-

[1] Read before the Boston Society for Medical Improvement, February, 5, 1900.

[2] Boston Medical and Surgical Journal, vol. cxxvii, p. 235.

[3] Boston Medical and Surgical Journal, vol. cxxvii, p. 434.

[4] Annales de Gynécologie et d'Obstétrique, 1897, vol xlvii, p. 53.

[5] Boston Medical and Surgical Journal, vol. cxxxv, p. 642.

[6] Zeitschrift f. Geburtsh. u. Gynakol., xli, 1.

thing is intact, except for a small incision through which to watch the plexus.

Fieux showed experimentally the amount of the separation of the cut roots of the brachial plexus when the shoulder was held down and the head carried to the opposite side with as much force as occurs in an ordinary delivery. He found that the upper two cords separated from 26 to 28 millimetres, the third only 12 and the lower two only eight. In other words, the upper two separated more than three times as much as the lower, and more than twice as much as the middle. The separation varies with the amount that the head is inclined to the opposite shoulder. It likewise varies with the amount that the shoulder is depressed.

The point at which rupture occurs, experimentally, is from about a quarter to half an inch from the emergence from the spinal canal, at or near the junction of the fifth and sixth cervical roots. The fibres of the suprascapular nerve may be ruptured here or at a point slightly lower. They are always ruptured among the first. This point is a little lower than that mentioned by Fieux, who states that rupture occurred five or six millimetres from the emergence of the nerves. The distance seems to be determined by the strength of the fibrous sheath which surrounds the nerve bundles. Very near the canal the prolongations outward from the dura prevent injury to the nerves. Farther out it is determined by a certain weakest point.

One very important point mentioned by Walton, which is admirably shown experimentally, is the fact that the suprascapular nerve must be severely stretched or ruptured, because it has a comparatively short course and what may be termed a very definite distal attachment where it passes through the suprascapular notch. Similarly, though to a less marked degree, the circumflex has a short course and a definite distal attachment where it winds about the humerus. In other words, these two nerves have but a short distance in which they can accommodate themselves to stretching.

Fieux produced by traction on the necks of rabbits, separating the head from the shoulder, a similar partial paralysis of the foreleg, but did not report the results of post-mortem examinations.

Cases reported by Phillips, Beevor, and Walton show similarly that a violent separation of the head from the shoulder may, in adults, cause a paralysis of Erb's type.

A degree of asphyxia leading to a loss of all muscular tone would obviously increase the danger of injury to the nerves.

In regard to the theory that fracture or dislocation of the bones may cause obstetrical paralysis, it should be remembered that paralysis from this cause in adults is not usually of Erb's type. Furthermore, certain anatomical facts in regard to the bony development at birth must be considered. The clavicle is osseous, except at the two ends, ossification beginning here earlier than in any other bone. The sternal and acromial ends are cartilaginous. The scapula at birth is cartilaginous along its whole inner border, at the angle, and in the acromion and coracoid processes. The main part of the body, the spine and the glenoid fossa are ossified.

The humerus at birth is ossified throughout the shaft; the head is cartilaginous. Thus the outer end of the clavicle, the coracoid and acromion processes are all cartilaginous and are all firmly united by strong ligaments. These parts making up the prominence of the shoulder are so freely movable and so strongly held by ligaments that injury to them is exceedingly unlikely to occur during birth. Injury to other parts is very much more likely to occur. Experimentally the cartilaginous head of the humerus is separated with great ease. The glenoid cavity may be broken off entirely by the exercise of considerably more force. The clavicle may be broken in its bony portion. The bony shaft of the humerus may be easily broken. Judging from what is seen experimentally, separation of the cartilaginous head of the humerus must be of extremely common occurrence during birth, and must often pass entirely unrecognized and indeed give rise to no symptoms, except the subjective one of pain, with perhaps a very soft crepitus which it would be impossible to detect with certainty during life. A fracture of a portion of the glenoid it is impossible to produce experimentally. The whole glenoid may be broken off. This would be an injury detected also with difficulty. Fracture of the clavicle and of the shaft of the humerus is in each case apt to occur about the middle of the bone and is detected with ease.

Experimentally, these fractures occur comparatively so easily that it is impossible by the use of any reasonable amount of force to dislocate the head of the humerus and practically absolutely impossible to dislocate the head of the humerus, if the word dislocation is used in the sense of forcing the head out of the glenoid through a rent in the capsular ligament. It is possible, with considerable force, to stretch and tear some fibres, particularly about the lower posterior part of the capsule.

It is perfectly conceivable that injury to the brachial plexus, through fracture of the clavicle, might cause paralysis of Erb's type, but it is likewise inconceivable that a fracture of the clavicle should very often pass undetected where there is an obstetrical paralysis. It is not possible for injury to any other bone than the clavicle to cause a paralysis of Erb's type.

It is, nevertheless, true that a considerable number of cases are recorded in which there is a backward displacement of the humerus, usually with paralysis of Erb's type, rarely without. My feeling in regard to these cases is that the dislocation, which is usually in the reports considered congenital, is in reality due to the paralysis; that is, that it is due to a slow yielding of the posterior part of the capsular ligament under the pull of the internal rotators. This form of dislocation was described by Dechenne in 1866. One case of backward dislocation has developed within my own observation during the second year of life. The child had a typical obstetrical paralysis, occurring after a version. When first seen the head of the humerus rested in the glenoid and could be slipped back onto its posterior border. When seen, a scant year later, the head rested outside of the glenoid and could be slipped forward onto its posterior border. This child has turned out to be microcephalic.

Another case had typical obstetric paralysis noticed immediately after birth, and examined by the family physician, Dr. Cahill, of Cambridge, who is positive there was no dislocation at first. I saw the child first at six months of age, when it was seen again by Dr. Cahill. The dislocation was then most striking.

Dislocation of this sort secondary to paralysis, whether or not accompanied by more or less tearing and stretching of the capsule at the time of the injury, is made much easier by the relatively small size, at birth, of the glenoid cavity as compared with the head of the humerus. Of course the disproportion is obvious in adults, but in infants at term the joint surface of the glenoid is in breadth only a quarter to a third of the diameter of the joint surface of the head of the humerus, while in adults it is one-half as large. In other words, the glenoid cavity is relatively from half as large again to twice as large in the adult as in the baby.

In obstetric paralysis the position of the arm is characteristic. It hangs at the side, rotated inward strongly, with the elbow slightly flexed, the forearm pronated so that the palm faces backward and outward and the wrist and fingers flexed. The most marked muscular atrophy is in the supra- and infra-spinati and deltoid. The pectoralis major and the subscapularis unopposed by any outward rotator keep the arm so strongly rotated inward that the head of the humerus is constantly stretching the posterior portion of the capsule. This stretching is increased by the backward and the downward pull of the latissimus dorsi. The result is a contracture of the pectoralis major and a gradual yielding of the weak posterior portion of the capsule. A backward displacement inevitably follows. The stronger anterior portion of the capsular ligament and the coracohumeral ligament, which at first prevented any forward dislocation, are not developed normally, and together with the contracture of the pectoralis major, hinder the rotation of the arm outward and the replacement of the head of the humerus in the glenoid cavity. Secondary bony changes may occur both in the glenoid cavity and in the head of the humerus. From disuse of the arm, lack of growth is common. It is possible that in some cases more or less recovery of power may occur in the deltoid and outward rotators, even after considerable displacement of the head of the humerus has occured. This is probably the manner of production of most of the so-called congenital dislocations of the shoulder, which is, therefore, usually a misnomer.

There are three classes of infantile dislocations of the shoulder. The first includes the true congenital dislocation, where the lesion is due to a true lack of development during intra-uterine life of the glenoid cavity and the head of the humerus, analogous to the congenital dislocation of the hip. This form of dislocation, however, is extremely rare, and many cases reported as congenital dislocations are probably in reality paralytic dislocations. While a lack of development in the acetabulum is the most frequent congenital defect in the pelvis, in the shoulder girdle congenital defect of the glenoid is less common than other malformations, such as absence of the clavicle, congenital elevation of the scapula, exostosis of the scapula, or defect of its lower portion. Lack of development in later childhood or in adult life cannot in any sense be taken to indicate that the dislocation is truly congenital, for in severe cases of obstetrical paralysis lack of development is common.[1] The association of paralysis with cases regarded as congenital dislocations should lead to the suspicion that the paralysis was the cause of the dislocation, and especially should this be suspected in cases in which there is reason to believe that the paralysis arose from trouble during delivery. If the cases reported as congenital dislocations of the shoulder are studied in this way, a large majority of them must be looked upon as probably of paralytic origin.

Another class of infantile dislocation is the traumatic. It is undoubtedly possible that this may be produced during delivery. Experiments and clinical experience, however, both show that this must be an extremely rare occurrence, simply because any violence sufficient to force the head of the humerus through the capsular ligament would almost invariably produce other injuries which would allow the shoulder-joint itself to escape.

A vast majority of the cases of infantile shoulder dislocations must be regarded as paralytic. The displacement may have been aided by rupture or stretching of the posterior part of the capsule at birth, but they are not true dislocations in the sense that the head of the humerus has passed through a rent in the capsular ligament. They are due to a gradual yielding of the ligament under a constant unopposed muscular pull in one direction.

Before speaking of treatment something should be said regarding prophylaxis. Traction is the cause of obstetrical paralysis. Of course it is often absolutely necessary to use extremely severe force in delivery where the choice must often lie between injury to or death of the child. There are certain times, however, when traction directly on the shoulder may be avoided. Particlarly in delivering an after-coming head, the pull may be exerted on the pelvis and chest rather than on the shoulders. In delivering the shoulders after the head is born, direct traction is much more apt to cause paralysis than is the freeing of the shoulders by insertion of a finger in the axilla,—a maneuvre likely of course to fracture the humerus. This accident, however, is far less serious than a paralysis. The suggestion of Walton that the second stage of labor is to be hastened should be limited by the other rule that it should not be shortened by any measure producing traction on the shoulders.

After the injury is done, support for the arm is essential. Thus further dragging on the stretched nerves or separation of their torn ends is prevented, the stretched ligaments are supported and the muscles are given a chance to recover their tone. The muscles should be protected from undue stretching just as in the early stages of infantile paralysis.

Thus for a time further harm is prevented. Later, massage and electricity have their uses. By these simple measures, or even without treatment recovery will occur in probably a considerable majority of the cases. The obstetricians thus regard obstetrical paralysis rather lightly, while the neurologists and orthopedic surgeons, who only see those cases which do not recover, regard the prognosis as bad. This difference is due probably to the varying degree of injury to the nerves; in one case simple stretching, in another a rupture of certain fibres of a nerve, and in the most severe possibly a complete tearing apart of the whole nerve. In cases not improving decidedly within the first six or eight weeks of life a serious injury to the nerves is to be regarded as probable, and consequently the outlook for marked im-

[1] Une Endémie de Paralysies Radiculaires Obstétricales. Guillermot: Annales de Gynécologie et d'Obstétrique, 1897, vol. xlvii, p. 35. An interesting series of cases occurring in the practice of one midwife, and probably usually due to difficulty in delivering the head after version before full dilatation had occurred.

provement is poor, although improvement has occurred after years.

It is a question whether in certain cases the injury cannot be repaired by surgical interference. The greatest obstacle to any successful nerve suture is that in all probability the nerves are torn by individual fibres as a hemp rope tears, not directly across at any one point. Furthermore, after several weeks there would probably be the greatest difficulty in recognizing in the small nerves of the baby any abnormality without considerable manipulation. And during the interval of waiting for improvement to occur, an ascending degeneration of the torn fibres would probably have occurred which would interfere with a restoration of function, even after approximation of the torn ends. Exploration is possible, however, even in small babies.

In the lower part of the posterior triangle of the neck the upper brachial plexus is comparatively easy of access. It lies back of the sternomastoid, above the omohyoid, in front of the trapezius. The scalenus anticus and the sternomastoid protect the great vessels and the phrenic nerve. The spinal accessory nerve is considerably behind the plexus. The subclavian vessels, thoracic duct and several small arteries running across the neck are all below the omohyoid.

The external jugular vein and the branches of the cervical plexus which wind around the posterior border of the sternomastoid are in danger. The difficulty in reaching the upper cords of the plexus lies chiefly in the shortness of a baby's neck. The outlook for successful interference, however, is doubtful. In one case, in a baby of six weeks, I have cut down on the plexus, but found nothing more that a rather soft spot just below the junction of the fifth and sixth roots. The child died of pneumonia two weeks after operation. In the older cases where dislocation has occurred probably little is to be hoped from nerve suture, although exploration is justifiable.

Leaving aside the possibility of any radical cure of the condition through repair of the nerve injury and consequent restoration of power in the paralyzed muscles, several palliative measures are to be considered. The condition always present and the one for which relief is most often sought is the inward rotation of the arm. The inability to elevate the arm and the other paralyses vary considerably in degree. For the relief of the inward rotation, stretching or section of the contracted pectoralis major is necessary. By means of plaster bandages applied with the forearm flexed to a right-angle and the arm rotated outward with the elbow at the side, it is a simple matter in the course of a few days or weeks to overcome the inward rotation and by direct pressure to bring the head of the humerus back into the glenoid cavity, if it is dislocated. It is possible that in a few cases rest of the over-stretched outward rotators may thus enable them to recover their tone and bring about some improvement. Relapse will almost surely occur, however, unless systematic passive motion and massage is used, aided by some orthopedic apparatus to check inward rotation.

In the more marked cases of longer duration section of the contracted muscles will cause a considerable improvement, but here again systematic after-treatment is essential. Several cases, among them one of my own, thus operated upon have been somewhat benefited.

The operative procedure of Phelps[8] consists in deepening the glenoid cavity, paring off a portion of the head of the humerus and stitching up the lax posterior portion of the capsular ligament. His procedure is based upon the belief that the dislocation results from a fracture of the posterior portion of the glenoid cavity occurring at birth. In one case in which I opened and explored the shoulder-joint in a boy six months old with a typical paralytic dislocation I found no evidence of malformation or fracture of the glenoid or head of the humerus. Stitching up more snugly the posterior ligaments caused slight improvement, although in his case systematic stretching of the anterior muscles probably accounted largely for any benefit obtained. Previous section of the contracted pectoral muscle should be advised.

In certain rare cases there is a marked laxity of the whole of the capsular ligament and an unusually extensive muscular paralysis, allowing the arm to drop downward. Here a shortening of the ligaments in order that the head of the humerus may be brought up into its normal relations will be of benefit. In all cases, however, in which the joint is opened, particularly where any portion of bone or cartilage is excised, the formation of adhesions is to be considered. Of course, in this manner, motion in the shoulder-joint is limited, but this very limitation of motion may still be a means of increased functional usefulness in the arm. In fact, in certain cases, where the paralysis is extensive, an arthrodesis of the shoulder-joint may greatly improve the condition, through enabling the arm to be moved by movements of the scapula.

Another measure to be considered in overcoming the inward rotation of the humerus is a linear osteotomy of the upper portion of the shaft of the humerus, with union of the bone in a position of outward rotation. Another possibility to be considered in overcoming the inward rotation is a transference of the insertion and consequent change in function of the latissimus dorsi. After the section of the pectoralis major, which is the operative procedure usually demanded, the latissimus dorsi might be exposed and cut close to its insertion along the inner edge of the bicipital groove. It might then, by means of a posterior incision, be reached and drawn back to be sutured to the humerus under the posterior border of the deltoid immediately below the insertion of the teres minor and above the origin of the external head of the biceps. In this manner the pectoralis major would be lengthened and the latissimus would be changed from an inward to an outward rotator of the arm, in a manner similar to that in which Tubby, by changing the course of the pronator radii teres, converts it into a supinator of the forearm. Some such measure as this would, if successful, overcome the great obstacle to permanent reduction.

In conclusion I wish to emphasize these points:

True congenital dislocation of the shoulder, that is, defective development of the scapula and head of the humerus, is of extremely rare occurrence.

True traumatic dislocation of the shoulder at birth or in early infancy is of extremely rare occurrence.

Obstetrical paralysis, which, as has long been recognized, is of Erb's type, is due probably almost invariably to a stretching and in some cases a rupture of the two upper roots of the brachial plexus, as is proved by anatomical study.

[8] Transactions American Orthopedic Association, vol. viii, p. 239.

Obstetrical paralysis is usually recovered from entirely in the course of a few weeks or a few months. If recovery does not occur within this period the prognosis is very much more serious, although improvement may occur even after the lapse of many years.

After an infant's arm has been held in the position of inward rotation for some months the posterior part of the capsule becomes so stretched as to permit the head of the humerus to slip out of the glenoid cavity posteriorly, while the anterior portion of the capsule and the pectoralis major are shortened. This backward subluxation is always made easier by the relatively small size of the glenoid cavity in infancy. It may be made easier by a tearing and stretching of the posterior part of the capsular ligament through the same trauma which stretched the upper cords of the brachial plexus.

A dislocation of this sort is easily reduced by measures which stretch the inward rotators of the arm, but when thus reduced it is held in place with extreme difficulty, because the cause which originally produced the dislocation, that is, the unopposed action of the inward rotators, is still present.

Any abnormality in the shape of the head of the humerus or in the glenoid in a case accompanied by paralysis or lack of development of the deltoid and supra- and infra-spinatus muscles is probably secondary to the paralysis, and if accompanied by a dislocation is not to be looked upon as the primary cause of the dislocation. Lack of bony development of a paralyzed arm may become very marked after the lapse of years, and this lack of bony development is not in any way to be regarded as proof of a congenital defect.

All early cases of obstetrical paralysis are to be treated by sling or bandage which will support the paralyzed muscles and prevent dragging on the ligaments and injured nerves.

In cases of obstetrical paralysis which persist without improvement there is reason to hope that surgical intervention looking to a union of the torn ends of the fifth and sixth cervical roots at a point from a quarter to three-quarters of an inch from their emergence from the canal may be of benefit.

The subluxation resulting from the paralysis is to be treated by stretching or section of the contracted muscles and ligaments, by osteotomy, arthrodesis, or muscle transfer, according to the conditions present in each case.

STEAM IN THE TREATMENT OF CHRONIC, HYPERPLASTIC, AND SENILE ENDOMETRITIS, PUTRID ABORTION AND PUERPERAL SEPSIS.[1]

BY F. W. JOHNSON, M.D., BOSTON,
Visiting Gynecologist, Carney and St. Elizabeth's Hospitals.

When I went on duty at the Carney Hospital in the fall of 1898 I found Dr. Malcolm Storer had been and was using steam in the treatment of the various forms of uterine hemorrhage. This method of treatment appealed to me, and I began its use at once in the treatment of chronic endometritis and menorrhagia.

Concerning this method Prof. A. Duhrssen thus writes:[2] "The method of arresting hemorrhage by steam was first employed by Sneguireff, of Moscow, in 1894, for profuse hemorrhage during the removal of an echinococcus cyst from the liver. Since then experiments have shown that parenchymatous organs can be incised almost bloodlessly, and that hemorrhage from arteries of the size of a dog's femoral can be quickly arrested by a steam jet.

"The technique is simple. A fenestrated uterine catheter is joined by a gutta-percha tube to a small boiler. The steam issuing from it should be at 212° F. Higher temperatures are advocated by some, but the author has never used them, except in experiments on animals. In this way dangerous uterine hemorrhage can be arrested permanently and painlessly without an anesthetic; and serious operations, for instance, hysterectomy for fibroid tumors, may often be avoided.

"The details of the procedure differ according to the age of the patient. If the steam is allowed to act for two minutes, exfoliation of the uterine mucous membrane follows, either *en masse* or piecemeal. A raw surface is left which forms adhesions, which cause obliteration of the cavity and subsequent atrophy of the uterus, and hemorrhage is cured as certainly as though the uterus had been removed. In order to exclude cases which are unsuitable for this treatment, such as malignant tumors or placental remnants, the cervix must always be dilated first. An important detail is that the instrument, when it passes through the cervix, must be encased in a drainage tube, for otherwise the heat may damage the cervical walls, and be followed by obliteration of the cervical canal and hematometra.

"Cases in which this treatment is indicated are exhausting floodings between the ages of forty and fifty, whether caused by chronic metritis, by abnormal friability of the walls of the uterine vessels, or by small interstitial myomata. In this last case the steam probably produces atrophy of the myoma, as well as of the uterus. Where it is required to arrest abnormal uterine hemorrhage without causing obliteration of the uterine cavity, as in young women with too profuse menstruation, the steam must not be allowed to act for more than a quarter of a minute (Sneguireff says one minute, which is certainly too long), and the process should not be repeated until after the next menstrual period. The application of steam for a quarter of a minute successfully sterilizes septic endometritis in puerperal fever, and the raw granulating surface left offers an excellent barrier against the further entry of bacteria into the circulation. Good results have also been obtained in subacute and chronic gonorrhea, and the author suggests its use as an abortive treatment for acute cases.

"If carried out properly the treatment is quite harmless, and has no disadvantages."

Dr. Alexander Rovinsky wrote me that Sneguireff, together with Blogovolin, had experimented on animals and had come to the following conclusions: (1) Desired portions of the liver could be excised without loss of blood, the animals surviving; (2) any part of the spleen could be cut out without loss of blood; (3) whole lobes of lungs can be removed without any loss of blood; (4) the same applies to the kidney; (5) also to some extent to the brain; (6) it is possible to stop the bleeding from the spongy portions of bones; (7) the marrow of the bone coagulates and the regeneration of the bone takes a normal course;

[1] Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, November 22, 1899.
[2] Klinische Wochenschrift.

(8) almost the whole cornu uteri may be taken out of the dog without bleeding; (9) the femoral artery of the dog, when cut transversely or otherwise, will not bleed after the application of steam; (10) bleeding from skin and muscles ceases immediately; (11) wounds subjected to the action of steam heal *per priam intentionem*; this last was observed not only on the experimented animals, but also on human beings.

Sneguireff has applied steam successfully as a hemostatic in the following operations: (1) In five cases of resection of the knee-joint, without any preliminary use of the bandage, or any employment of ligatures or forceps; (2) in extirpating a carcinomatous mamma under the same conditions; (3) for the removal of fatty, cancerous and other tumors of the skin; (4) in amputation of the cervix; (5) in resecting bones and in sequestrotomies: (6) in abscesses to deodorize and to promote filling up of the abscess cavity; (7) in various sinuses and fistulæ (especially of a tuberculous nature).

Sneguireff, in 1895, was first to suggest the use of steam in the uterine cavity. He spoke of steam as a styptic, even strong enough to stop a dog's femoral. In 1895 Pincus was led to try it in gynecology by Sneguireff's article. He used the ordinary kettle of an inhaling apparatus with a safety valve. A male catheter with a slight curve and three lateral windows to aid in the escape of the steam was used in conducting the steam inside the uterus. He states that it is a *sine qua non* that the uterus should be perfectly movable if the operation is to be done without ether. In 1895 he used it in a few cases with good results.

Panecki had a similar experience in 1896. Kahn (1896) in his early trials used steam at 100° C. for two minutes; later 115° for fifteen seconds to one minute. In his experience he found that the more energetic the treatment, the better the results. It is generally painless. He used it mostly post partum. If in such cases the uterine walls are thin, only low pressure is admissible. It seems to do good in *incipient* inflammation of the appendages, but should not be used when actual pus is present. If the products of conception are retained, they should first be removed. He used it in nine puerperal cases. He claims that steam in the uterine cavity has (1) no disadvantageous sequelæ and causes practically no pain; (2) quiets sensitiveness; (3) starts good contractions; (4) deodorizes; (5) sterilizes; (6) through shutting off blood and lymph vessels by coagulation of albumin, it affords a roof for new granulations to form under.

Pincus, in 1897, reports several cases in the treatment of putrid abortion. He emphasizes that in puerperal cases it must be used only when appendages are free. It is especially valuable in cases of habitual abortion, as it removes the diseased endometrium which very likely is the cause of the abortion. At that time he used a wooden speculum to guard the vagina. He uses it without paying any attention to possible retained membranes. He regards it, to a certain extent, a specific in the treatment of putrid abortion. It was not found valuable in bleeding submucous fibromas or other causes that render the inner surface of the uterus irregular. Examination of specimens showed that the action was most vigorous in the immediate neighborhood of the canula.

Schick (1897) used hot water instead of steam. He used it boiling with certainty that by the time it reached the uterus its temperature had dropped to 80° C. or 85° C. He used it one-half to two minutes. He used it in four cases, all under ether.

In 1897 Sneguireff had used steam 400 to 500 times without the slightest bad effect. In cases occurring at the menopause, if the bleeding cannot be stopped otherwise, he advises using the steam longer than one minute. He advises against the use of steam, if there is any disease of the adnexa. Steam should be delivered in the uterus at about 100° C.

In 1898 Pincus further remarks about vaporization and vapocauterization: "My communications concerning the value as a therapeutic agent of hot aqueous steam in gynecology and obstetrics have attracted much attention on the part of my colleagues, if I can judge by the number of communications I have received from all parts of the world in reference to it. But my own service in the matter is only a very modest one, for, as I have already carefully stated, it was only through the reading of Sneguireff's communication as to the styptic effect of hot steam that I was led to introduce its use in gynecological and obstetrical therapeutics."

Pincus has got up a very complete apparatus, which is described and pictured in the *Centralblatt für Gynecologie*, 1898, page 256. In this machine he controls both the pressure and the temperature of the steam. He thinks many of the failures have probably been due to not sending the steam into the uterus hot enough. He generally keeps patients in bed a week. There is almost always more or less discharge, which seldom amounts to much. The odor in septic cases almost always stops. He still sticks to his view that tender appendages and a stricture of the cervical canal are contraindications. He has no fear that steam will get into the tubes, but if the tubes are diseased harm could easily be done by the vigorous contractions of the uterus that are set up. In general terms he regards a very rigid cervix as a contraindication. Warns against veiling malignancy by means of vaporization. He says steaming is of especial value in the bleeding of the climacteric, not depending on malignant disease, and leucorrheas following the menopause. In one obstinate case he used it at 119° C. for two minutes, with the complete destruction of the uterine canal, but cured the patient just the same. He has used it in 18 post-climateric floodings, with good effect in 13. Was obliged to repeat the steaming in two cases. Also used it one minute at 100° C. to 105° C. in seven cases of metrorrhagia and subinvolution, with five successes. He does not believe in using it in submucous fibroids on account of the danger of suppuration. Has used the steam in a large number of cases of endometritis with good results. Sometimes he uses the steam and sometimes the vapocautery. Cured three cases of gonorrheal endocervicitis. He found the steam did no good in a case of puerperal general sepsis.

Hollander, in 1898, showed his apparatus for the use of hot air instead of steam. Can get by it three times as much heat as by steam; can measure it better and apply it more exactly.

Baruch (1898) reports a case of complete atrophy of the uterus following steaming. "Girl, age twenty-seven, was steamed once as an out-patient by a female M. D. Never any menses afterwards, with symptoms of the menopause. Uterus, when examined several months afterwards, was found tiny in size.

Again quoting from Pincus (1898): "By this time

the apparatus has proved its worth. Now it will be only a great exception that one will be obliged to remove a uterus for a hemorrhage at the menopause. Further experience leads me to suggest the following: (1) The cervix should be protected in every case. It is a necessity if the treatment is to last longer than one-half minute. As far as that goes, time begins to show me that in most cases half a minute is quite enough, especially if previous to using the steam you carefully wipe out the uterus with a Playfair sound. If there is much detritus in the uterus, steam should be played in for thirty seconds, then the clots removed and the steam reapplied for thirty seconds more; (2) there should be no repetition of the steaming until complete regeneration of the mucous membrane has taken place; (3) steaming for endometritis should be done in the few days before menstruation, or after it, and never during."

Kahn (1898) writes: "If you want to produce a deep effect use low temperature a long time, and if superficial a high temperature a short time, that is, bleeding of the menopause *versus* puerperal conditions. In puerperal cases I use even up to 112° C. for even three to four minutes, depending on intensity of affection." He reports a case of pregnancy and labor following one steaming out. "The steam tube should not be pressed against the fundus, as you may get a perforation later on."

Weiss (1898) reports the case of a girl, age nineteen, where steam at 100° C. for three or four minutes was used for metrorrhagia (not a puerperal case). There followed complete obliteration of the uterine cavity and severe symptoms of the menopause. He has collected three cases of obliteration and two of stenosis of the cervix following the use of steam, a large number considering how new the process is and how little used as yet.

For three years Fenomenow has used steam where the uterus was to be opened. Where the uterus was septic he has often steamed for several minutes to ensure its disinfection before removal. He even steams before vaginal hysterectomies and before morcellation.

Pincus (1898) gives his views on the present state of steaming as follows: "Atrophy of the uterus with obliteration of the canal cannot be called a 'mischance'; it is inexcusable. Steaming is of inestimable value in inoperable carcinoma of the fundus. In the treatment of subinvolution I regard it as something we cannot do without. It may also be of value in producing artificial sterility, if desired."

Pincus makes the rule to use the steam as short a time as possible. Fifteen seconds is generally enough. Thirty seconds is the maximum. In young people thirty seconds is to be regarded as too much. It is better to repeat after the mucous membrane has had a chance to regenerate. The temperature of the steam inside the uterus should range between 102° C. and 110° C. The rule is, the shorter you are to work the higher must be the temperature. The quicker you work, that is, the less the cooling off after you shut off the steam in the catheter, so much the prompter is the effect. In a recent case he used 109° C. for only eight seconds and stopped a vigorous hemorrhage entirely. In old women, when very likely you desire to obliterate the uterine cavity, he uses it about two minutes at 105° C. to 110° C. and repeats if necessary.

After experimenting for a long time I have decided that the following method of doing the operation gives me the best results. The ordinary steam throat atomizer is used for generating steam: A hard-rubber tube eight inches in length, the size of a No. 18 French bougie, conically pointed at one end, is connected with boiler by soft-rubber tubing. The hard-rubber tube is detachable and is boiled in the soda solution with the instruments. The external genitals are washed with soap and water, then with permanganate-of-potassium solution and oxalic-acid solution; finally rinsed off with normal salt solution. The vagina is treated in the same way. After dilating the cervix, wipe dry with sterile gauze the cervical and uterine cavities. Introduce the small-size uterine speculum and through it steam body and cervix thirty seconds. Remove uterine speculum, wipe dry with sterile gauze the cervix and body, and steam again for thirty seconds. The patient is kept in bed from four to six days. Short douches are given night and morning. The steam as it leaves the boiler is 212° F., but inside the uterus the temperature varies from 192° F. to 212° F., dependent upon the amount of moisture in the uterus. With a dry uterine cavity the self-registering thermometer would indicate 212° F. There is no danger of burning too deeply if the steam is used as above described.

Unless I wished to obliterate the uterus I should not consider it permissible to use the steam under pressure or to use it longer than one minute. In puerperal cases the curette makes raw healthy as well as diseased surfaces, while the steam can be used without doing any mechanical injury. The steam is safer and more thorough than the curette. We all know from experience repeated over and over again how very difficult it is to curette smoothly the inside of the uterus. Islets of tissue are apt to be left here and there, especially at the fundus and in the horns. The steam uniformly reaches every part of the uterine cavity, and there is no danger of it escaping into the tubes, if used as I have described.

It was by having steamed uteri examined by the pathologist that the proper *modus operandi* could be determined upon. To work up from a comparatively short exposure of the uterine cavity to steam (212° F. as it leaves the boiler), examining the uteri from time to time, until the examination showed that the endometrium was destroyed almost down to the muscular layer, seemed the safer plan, then drawing conclusions from the clinical results. I felt safe in stopping just short of the muscular tissue in cases of chronic endometritis, hyperplastic endometritis, etc., than to run any risk of *burning* the muscular tissue or of destroying the glands and thus cause cicatricial tissue where no endometrium would be produced. Where there is suspicion of malignant disease, tissue for microscopical examination should be removed with the curette at the time of steaming. The tissue destroyed by the steam begins to come away in seven to twelve days. It may come in small pieces or in quite large junks, like the specimens shown. Since receiving Dr. W. F. Whitney's report of the examination of the first uterus sent him, I have steamed through the smaller uterine speculum and have used the steam as above described. The smaller speculum would offer less chance of escape for the steam, consequently there would be more heat inside the uterus and the cervical canal would be just as well protected.

DR. WHITNEY'S REPORT.

"I have finished the examination of the four uteri which you have cauterized by steam, and as far as I can determine, in none of them has the mucosa been entirely destroyed through its entire thickness. The action in all seems to be fairly uniform throughout the entire canal, although in No. 3 (January 21, 1899) it failed to reach the bottom of the cornu at the fundus. In No. 4 (January 25, 1899), on the whole, the action seemed to be the deepest, while in No. 3 (January 21st) it seemed to be the least. In none was there much of the cervical lining left, whether destroyed or rubbed off I cannot say, but there was no evidence of any action on the muscular tissue. In all the action was most marked at the fundus, but as the endometrium was thicker there only about one-half its thickness was destroyed. Of course the cells may be killed more deeply than the microscope will show, as their vital function may be gone although the nuclei still stain and the shape of the cells is unaltered. But as far as any physical evidence goes, the action has in no case extended more than through three-fourths of the thickness of the endometrium, and then without absolute uniformity."

This report was very satisfactory, in that it showed the destruction did not go into or even quite down to the muscular tissue. I was aiming to get live steam hot enough inside the uterus to cause exfoliation of the entire endometrium. The effect on the edometritis will show this. If it is desired to cauterize into the muscle, as in senile cases of hemorrhage or endometritis, it would simply be necessary to allow the steam to escape inside the uterus for two minutes or more.

I have here tabulated 31 cases. Previous to using steam these would have been curetted. Each case was looked up two or more months after the steaming to ascertain what effect it had had on the endometritis and the menstruation.

In addition to the above, I have used it in one puerperal case, curetting just before using the steam. The uterus had been curetted twice by the attending physician. She had been septic for three days. Pulse and temperature were high. There was a profuse and offensive vaginal discharge, she had had one rigor and there was phlegmasia alba dolens on the left. She got no worse after the steaming, remained about as she was for thirty-six hours, and then began to improve.

During the past year steaming was done in a great many cases where other operations were performed, and it was not always possible to say how much the other operations contributed to the relief of symptoms. Consequently, in these 31 cases, I have selected as much as possible those who were alone steamed.

CASE I. K. McM., twenty-four, single. Dysmenorrhea for the past six months; constant leucorrhea; frequent micturition, with scalding. Consumptive family history. Diagnosis: Chronic endometritis and chronic urethritis. Uterus curetted for specimen, then steamed. A solution of nitrate of silver applied to the urethra. No tubercle bacilli found in the scrapings. Has been unwell five times since going home. Has had no dysmenorrhea and there is no leucorrhea.

CASE II. J. H. C., twenty-four, married. Backaches; severe dysmenorrhea; leucorrhea since childhood. Diagnosis: Chronic endometritis. Uterus steamed in February, 1899. Has menstruated since then without pain, and has been absolutely free from all backache and leucorrhea since the operation.

CASE III. W. H. H., thirty, married. One child, eleven years ago. Dysmenorrhea during the first day of sickness; abundant leucorrhea, requiring the use of a napkin; at times considerable hemorrhage from the bladder, and smarting and burning during micturition. Diagnosis: Chronic endometritis and chronic urethritis. Uterus steamed in May and urethra painted with nitrate of silver. The injection of the urine into guinea-pigs excluded tubercular disease, which was strongly suspected. No dysmenorrhea, no leucorrhea, and no trouble with micturition since the operations. The patient is now three months pregnant.

CASE IV. H. R., fifty-one, married. For four years very profuse leucorrhea, at times very irritating; obliged to wear a napkin most of the time. Diagnosis: Senile endometritis. Four months after the steaming there was a little leucorrhea, but it was not irritating. Advised a second steaming, which was done November 15, 1899; the uterus was steamed two minutes.

CASE V. A. A. Q., twenty-five, married. Menorrhagia, severe dysmenorrhea; leucorrhea for four years. Some time ago had scalding micturition for two months; dysmenorrhea, requiring the use of morphine. Diagnosis: Chronic endometritis. Uterus steamed. Two months after the steaming there has been no leucorrhea and no pain during menstruation.

CASE VI. R. P. E., thirty-one, married. Leucorrhea since puberty; a show of blood every two weeks for last five months. Diagnosis: Chronic endometritis. Uterus steamed. Been unwell three times since the steaming; first time went three weeks and five days; since then has been regular; almost no leucorrhea.

CASE VII. E. B., twenty-eight, married. Menorrhagia; the amount has doubled in the past two years; leucorrhea. Diagnosis: Hyperplastic endometritis. Uterus steamed. Been unwell twice since the steaming; flowed four days, formerly seven to ten, and had no pain; no leucorrhea.

CASE VIII. T. W. F., forty-one, married. Been flowing constantly for fourteen days; leucorrhea for one year; at times it is bloody. Diagnosis: Three polypi projecting from cervix; hyperplastic endometritis; uterus large. Scrapings removed for pathologist and the uterus steamed. First menstrual period occurred twenty-five days after the steaming; used twelve napkins; no pain. Menstruation returned in twenty-eight days; used eight napkins and was through in five days; no pain. Between and since these menstrual periods there has been scarcely any leucorrhea and that not bloody. Dr. W. F. Whitney reports that it was a case of polypoid glandular hyperplasia.

CASE IX. B. R., thirty-seven, single. Constant leucorrhea with backache and dragging down; dysmenorrhea with menorrhagia (soaks twenty-five to thirty napkins). Diagnosis: Chronic endometritis. Uterus steamed. No improvement in the menorrhagia; relief of the dragging down feeling and diminution in the amount of leucorrhea. Advised steaming again.

CASE X. H. C. Q., thirty-two, married. Gonorrheal vaginitis, endometritis and urethritis of some weeks' duration. May 5, 1899, uterus steamed; vagina swabbed with Churchill's tincture iodine; nitrate of silver applied to dilated urethra.

May 30th, returned with a fresh attack. Treated as above, with complete relief.

CASE XI. M. S., twenty-four, single. Constant leucorrhea with backache; dysmenorrhea. Diagnosis: Chronic endometritis. Uterus steamed. No dysmenorrhea or leucorrhea since the operation.

CASE XII. E. Q., sixteen, single. Leucorrhea with backache and severe dysmenorrhea. Diagnosis: Chronic endometritis. Uterus steamed. Been unwell twice since the steaming; no pain; no leucorrhea.

CASE XIII. M. D., thirty-seven, married. Had four abortions at three months from July, 1895, to December, 1898; constant white thick leucorrhea. Diagnosis: Chronic endometritis. Uterus steamed. No leucorrhea since the

steaming. It would now be very satisfactory if she would become pregnant and not abort.

CASE XIV. L. K., twenty-five. Thick vaginal discharge, at times offensive, for a long time. Diagnosis: Debility, retroversion and chronic endometritis. The uterus was steamed and an Alexander operation done. Two months and a half after the steaming she reported that there had been no vaginal discharge for some weeks after the steaming. Then without cause it began, but it was not as bad as formerly. Two months and a half after the first steaming, and a few days after a menstrual period, steam was again applied. The cervix was found patulous, the internal os easily admitted a Sims's sound and there was no indication of cicatricial tissue. There has been no leucorrhea since the second steaming.

CASE XV. C. E., married four years. Dysmenorrhea. Profuse, thick, yellow vaginal discharge. Diagnosis: Chronic pelvic peritonitis and chronic endometritis. On opening the abdomen a condition was found demanding hysterectomy. On examining the uterus the endometrium was found everywhere of a brownish-black color. The fundus and horns had been thoroughly steamed.

The uterus was sent to Dr. W. F. Whitney, and the following is his report: "I have examined the uterus cauterized with live steam, and find in the cervix, where the mucosa was very thin, that apparently the whole thickness had been killed, in the middle of the body about three-quarters of the thickness, and in the depths of the fundus about one-half the thickness. The action was very uniform everywhere, but I should not think that the length of time was sufficient to destroy the mucosa throughout. Of course, the action may go deeper than the microscope shows, but all that I can judge by is the depth to which the blood corpuscles and cells are altered."

After Dr. Whitney's report was received the uterus was steamed for a longer time.

CASE XVI. A. E. W., twenty-three, single. Severe dysmenorrhea; considerable leucorrhea. Diagnosis: Chronic endometritis; hemorrhoids. Uterus was steamed. Three months after leaving the hospital had menstruated twice without pain. There was no leucorrhea.

CASE XVII. K. T., twenty-five, married seven years and never pregnant. Has had repeated attacks of peritonitis and frequent and painful micturition. Severe dysmenorrhea and considerable leucorrhea. Diagnosis: Retroversion and chronic endometritis. Uterus steamed; left tube and ovary removed, part of the right ovary resected and the uterus suspended. Three months after the operation had menstruated twice, and instead of flowing ten to fourteen days she flowed seven days the first period and six the second. During these periods there was but slight dysmenorrhea.

CASE XVIII. M. G., seventeen, single. Neurasthenic; severe dysmenorrhea; profuse thin, odorless vaginal discharge. Diagnosis: Retroversion with adhesions and chronic endometritis. Uterus steamed; portions of both ovaries resected and the uterus suspended. Menstruation did not appear for a month and a half. She used in all but five napkins; before the steaming used eighteen to twenty. Had severe dysmenorrhea; no leucorrhea.

CASE XIX. L. R., thirty-one, single. Severe dysmenorrhea; some leucorrhea. Diagnosis: Retrocession; shortening of the uterosacral ligaments; chronic endometritis. Uterus steamed; uterosacral ligaments cut and uterus suspended. Menstruated while in the hospital with but little pain. Menstruated one month after getting home with scarcely any dysmenorrhea; no leucorrhea.

CASE XX. A. F., twenty-seven, single. Menorrhagia; constant thin, yellow vaginal discharge. Diagnosis: Retroversion, bound down by adhesions and chronic endometritis. Owing to the profuse menorrhagia the uterus was curetted and then steamed. The right tube and ovary were removed, part of the left ovary resected and the uterus suspended. Four months after the operation she had been unwell three times; flowed five days and used about eight napkins. Has had slight amount of leucorrhea.

CASE XXI. E. O. B., twenty-five, single. Neurasthenic; dysmenorrhea; menorrhagia; thick, yellow vaginal discharge with offensive odor. Diagnosis: Retroversion and chronic endometritis. Uterus steamed and an Alexander operation done. Two months after the operation she had been unwell twice. There was great improvement in the menorrhagia, but she still had dysmenorrhea and leucorrhea.

CASE XXII. E. B. H., twenty-six, single. Leucorrhea began thirteen months ago as a yellowish discharge, which soon became greenish in color. Irritation and soreness soon began about the vulva, accompanied with scalding during micturition; obliged to wear a napkin; severe dysmenorrhea. Diagnosis: Endometritis, vaginitis and urethritis. Uterus steamed and Churchill's tincture iodine applied to the dilated urethra. Three and a half months after the steaming she had been unwell twice; flowed about as formerly; some dysmenorrhea, but not as much as formerly; none during the flow; diminution in the amount of leucorrhea.

CASE XXIII. B. F., twenty-eight, single. Severe dysmenorrhea the first day, confining her to bed; profuse leucorrhea. Diagnosis: Anteflexion of uterine body; undeveloped uterus; retrocession; chronic endometritis. Uterus steamed. Been unwell twice since steaming; flowed freely and had no pelvic pain. Before the operation flowed but little, and had severe dysmenorrhea; no leucorrhea.

CASE XXIV. A. R., twenty-eight, married. Sterile; considerable leucorrhea; no dysmenorrhea until September, 1898. Diagnosis: Tumor on right side of uterus anteriorly; chronic endometritis. Uterus steamed; left tube and ovary removed; small fibroid enucleated. Been unwell once since the steaming; flowed as formerly, but had no pain; has no leucorrhea; freedom from all pain.

CASE XXV. H. D., forty-five, single. Epileptic for thirty years; considerable leucorrhea; dysmenorrhea. Diagnosis: Retroversion; cystoma on the left side; chronic endometritis. Uterus steamed; cystoma removed and uterus suspended. Been unwell once since the operation; no improvement, except some diminution in leucorrhea.

CASE XXVI. C. E. W., forty-two, married. Slight leucorrhea. For the past ten years has had backache when unwell. Diagnosis: Retroflexion; a mass on the left side of the uterus; chronic endometritis. Uterus steamed. Hysterectomy was then done. Specimen sent to Dr. W. F. Whitney. This was the second uterus sent to Dr. Whitney.

CASE XXVII. M. McC., twenty-nine, married six years. Has had one child and two abortions; last abortion three years ago. Six weeks ago began to flow, and has flowed more or less ever since; previous to six weeks ago had not flowed for months, as she was nursing her child; white and thick vaginal discharge, requiring a napkin. Diagnosis: Retroflexion of a large soft uterus; chronic endometritis. Uterus steamed; uterus suspended. No flowing since the steaming (over two months); much leucorrhea; uterus of normal size and in perfect condition. Advised steaming again.

CASE XXVIII. F. B., thirty-two, married one year; one child; no abortions. For six weeks sharp, crampy pain in left ovarian region; backache; white, watery vaginal discharge; some dysmenorrhea. Diagnosis: Chronic endometritis; uterus pushed to the right; cystoma of the left ovary. Uterus steamed; cystoma removed; uterus suspended. Been unwell twice since the steaming; first time flowed one-half day; flowed a very little for a few hours; "had an ache just below the navel." Second time flowed two days; soaked five napkins; no pain; has absolutely no leucorrhea.

CASE XXIX. C. C., thirty-three, married eighteen years; three children; no abortions. Constant leucorrhea; for three years has had more or less dull pain in the region just below the right kidney; pain in the left ovarian region. Since October has noticed swelling in the right iliac region. Uterus steamed; cysts in right ovary punctured with cautery; uterus suspended; adhesions about the gall-bladder broken up. The right kidney, which was very movable, was fastened by securing its capsule to the

fascia below the ribs with three sutures of silk. Great improvement reported six months after the operations.

Case XXX. E. B., thirty-four, married three years; one child thirteen months old. Some leucorrhea; dysmenorrhea. Diagnosis: Retroflexion; uterus large; chronic endometritis; left ovary enlarged and prolapsed. Uterus steamed; retention cysts in the left ovary were punctured with the cautery; uterus suspended. Has been unwell once since getting home; flowed the usual time and amount; no pain: has no leucorrhea.

Case XXXI. C. N., twenty-nine, married four years; one child two years ago. Backache; sagging and dragging down; considerable leucorrhea. Diagnosis: Retroversion; chronic endometritis. Uterus steamed; retention cysts in left ovary punctured with cautery; uterus suspended. Been unwell once; flowed as usual; little pain; has a little leucorrhea.

Clinical Department.

MASSACHUSETTS GENERAL HOSPITAL. CLINICAL MEETING OF THE MEDICAL BOARD.

Regular meeting, December 15, 1899, Dr. C. B. Porter in the chair.

IDIOPATHIC DILATATION OF THE COLON.

Dr. R. H. Fitz showed a case of this affection in a child aged two years and one month. The patient had been nursed until twenty-three months old, and since the age of eleven months had also been fed. Constipation had existed from birth, intervals of several days being frequent, during which no dejections occurred, and then only from the use of laxatives or enemata. When six months old there were frequent loose discharges during a period of two months, and since then constipation had been more marked than before. There had been a considerable progressive and symmetrical enlargement of the abdomen, with slight temporary diminution in size, dependent upon evacuations of gas and feces. At present the distended abdomen is everywhere tympanitic, although the abdominal walls are sufficiently flaccid to permit the distended intestinal coils to be readily palpated. There is no obvious cause of obstruction to be determined, and the general nutrition of the child is unaffected. The case is regarded as one of infantile dilatation of the colon, due to obstinate constipation. As there are no urgent symptoms, and sufficient temporary relief is to be obtained by laxatives and enemata, it is considered inexpedient to recommend at present any so radical a measure as extirpation of the distended portion of the large intestine. The mother has been informed of the nature of the affection and of the importance of continued medical supervision of the child.

Dr. J. J. Putnam showed the following cases:

I. INSTRUCTION IN CO-ORDINATION IN TABES.

This was a patient with tabes, who, about a year and a half before, had became rapidly ataxic, so that, finally, he was almost wholly confined to his chair. The case was shown to illustrate the benefit which may be obtained from systematic instruction in co-ordination. The patient had been taught by Mr. Harding to stand and walk and to do various exercises, first with two chairs, then with crutches, then with canes, and finally alone. Considering the difficulties which had to be met, he had made good progress.

II. MUSCULAR DYSTROPHY.

This was a patient with advanced muscular atrophy of the dystrophic variety. The case was reported partly as an illustration of that type of disease, partly in order to show how long such patients may continue to live and even work, in contradistinction to the case of those with atrophy of spinal origin. This patient is now about thirty years old, and all the skeletal muscles are involved, and, in addition, the muscles of the face. The deltoids, the supra- and infra-scapular muscles and those of the forearms and hands and of the calves are much better preserved than the rest, and the first two groups mentioned are remarkably large, firm and dense. The disease began when the patient was thirteen years old and has been slowly progressing ever since, yet in spite of this fact, and even though there is double facial paralysis and the erect posture can only be maintained by skilfully balancing, he is still able to support himself, in a measure, by peddling.

Dr. G. L. Walton showed a

CASE OF ACROMEGALY.

Constant relation between this disease and lesion of the pituitary body has been disputed on the ground that such lesion has been found without sign of acromegaly, and conversely that post-mortem examination in acromegaly does not always show pituitary disease. In view, however, of the coincidence of these affections in the vast majority of cases, it is pertinent to inquire whether these apparent discrepancies may not be reconciled, a reconciliation towards which Dr. Brooks has made a decisive step in practically establishing the fact that acromegaly is due only to *increased secretion* of the pituitary gland. It follows that a destructive lesion of this gland will not produce acromegaly unless the secretion is increased; the cases of acromegaly not accompanied by post-mortem change in the pituitary body may be due to the fact that the increased secretion was not accompanied by obvious physical abnormality of the gland. In this connection I should like to exhibit a section, prepared by Dr. Mallory, from the pituitary tumor of our late colleague whose case was reported in the Journal of December 7, 1899. The specimen shows several large collections of colloid, showing the active secretion, and possibly increased secretion, of that part of the gland not destroyed by the sarcoma. In this case sarcoma was not only demonstrated by the post-mortem finding, but was indicated by the clinical history, the rapid course and early fatal termination offering a marked contrast to the history of uncomplicated acromegaly, the latter disease running a course of perhaps fifteen to twenty years, without metastasis, spinal headache or vomiting, a history pointing to hyperplasia of the gland rather than to malignant invasion.

Individuals presenting moderate variations from the average type in form or feature (variations suggestive of altered function of the pituitary gland either within or without the limits of health) are not infrequently observed, but the opportunity is rare to study a typical case of pure acromegaly. Such a type is presented by this patient, for whom we are indebted to Dr. Howard, under whose observation he came at Tewksbury.

The patient, a teamster, fifty-nine years of age,

height five feet, ten inches, has noticed progressive weakness, loss of virility, and pains in various parts of the body during the past fifteen years; during the same time the lower part of his face, and his hands and feet, have increased steadily in size. You will notice first the facial aspect: the face is very long, the lower jaw massive and projecting so that the lower teeth (formerly on a level with the upper) are now fully half an inch in advance, but without the separation of teeth usually found in these conditions. The head, while large (he wears a 7¾ hat), has not increased proportionately in size. The nose is large and broad, the ears long and wide, the tongue large in size. The hands are typical; you will note the general square appearance of the finger tips; the length of the hand (8¾ inches), the breadth (4¼ inches), and the thickness are unusual, these measurements being equal to the largest recorded in Dana's text-book. That the bones take part in the hyperplasia is shown by this skiagraph, in which you will also note the spongy texture and comparatively indistinct edges of the terminal phalanges. The chest measures 46½ inches; the feet are large and bulky, though the increase is not quite in proportion to that of the hands. The patient's lack of vigor is in marked contrast to his bulk.

Dr. E. W. Taylor demonstrated

A CASE OF POLIENCEPHALITIS SUPERIOR AND INFERIOR, WITH ACUTE ANTERIOR POLIOMYELITIS.

The patient, a previously well man of twenty-seven, without other venereal history than gonorrhea seven years ago, was confined to the bed for three weeks in January of this year with an attack supposed to have been influenza. On recovering from this acute — probably infectious — disorder the following conditions persisted, whether of sudden or relatively gradual onset is not known: Paralysis of both sixth nerves; of right seventh nerve; of right eighth nerve — much impaired hearing; paresis of motor portion of right fifth nerve and of the tenth and twelfth nerves. Associated with this involvement of cranial nerves was a flaccid, atrophic paresis of both arms, but particularly of the left. There has been considerable improvement since the onset of the disease, but the paralyses mentioned are still well marked. There are, at present, altered electrical reactions. [This case will be reported more completely later.]

A SECOND CASE OF CHRONIC CYANOSIS WITHOUT ASSIGNABLE CAUSE.

Dr. Richard C. Cabot showed the following case:

F. S., a spinster of forty-nine, a native of Roxbury, and a rubber-worker by trade, came to the Out-Patient Department, January 5, 1894, complaining of vertigo, weakness, a dry, bad-tasting mouth, and constipation. What was thought to be a blue line due to lead was noted on her gums. She was given cascara and potassic iodide, and did not appear again till a year later, January 12, 1895.

At this visit it was noted that the knee-jerks were normal and wrist-drop absent. The urine was pale, 1.011, with a trace of albumin, a few hyaline, granular and fibrinous casts, one having blood and fat adherent. Dr. Blood found "considerable lead in 1,040 cubic centimetres." Blood examination showed 120 per cent. of hemoglobin. January 22d she was admitted to the hospital under Dr. F. C. Shattuck, and the following history obtained: Family history good, except that her father died of "consumption of the blood." Otitis media at eighteen. Several attacks of what was apparently acute articular rheumatism; menopause in 1891; habits good. Since the menopause, has been troubled off and on with vertigo, palpitation and headache. Feels slightly dizzy most of the time and at intervals, from no apparent cause, the room begins to swim about, and she has to grasp at something for support. Attacks are ephemeral. No tinnitus, nausea or eye symptoms.

Palpitation and precordial distress, on excitement or exertion, for seven or eight years; slight dyspnea on exertion; no edema. Constipation, chronic.

Headache, frontal, more or less for years; worse for four months. Blueness of lips noticed by sister six months ago. Four months ago, after having three teeth drawn, got a bad stomatitis. Itching, occasionally troublesome at night, with burning sensation all over. Polyuria noticed for a year; has to pass urine two or three times at night. No hemorrhages.

Examination. — Face and mouth very markedly cyanotic; conjunctivæ much injected. *No* lead line. Heart negative, except a slight systolic murmur in the pulmonic region. Edge of liver palpable. Spleen considerably enlarged up and down (and up to sixth rib and two fingers below rib margin). No ascites. Gums bleed very easily. Hands and feet very blue; fingers not clubbed. *Tâche cérébrale* marked. Scratch marks on trunk. A patch of eczema in the left iliac region; lungs negative. Urine pale, 1.000; a slight trace of albumin and a few hyaline casts; a faint trace of bile was present. Hemoglobin, 120 per cent. Spectroscopic examination shows two bands of oxyhemoglobin and no others.

After a week's stay the liver had receded to the rib margin, but the spleen was still enlarged. The vertigo and cyanosis decreased considerably under quinine and potassic iodide, but the hemoglobin remained 120 per cent. After a stay of two months she was discharged March 28, 1895.

Four years later (April 4, 1899), she came again to the Out Patient Department with the same complaints and in the same condition. I saw her at this time, and counted over 12,000,000 red cells in a cubic centimetre of her blood. Her symptoms seemed to have continued unabated since her last appearance at the hospital, but the sponginess and bleeding of the gums were now the most troublesome thing. The attacks of vertigo come every two or four weeks and make her stagger as if drunk. Has lost twenty pounds in six years. The skin now showed considerable bronzing, especially about the axillæ, but small, leucodermatous patches are scattered over the trunk. Cyanosis is as marked as ever, especially on the mouth. The gums are spongy and sore. Retinal examination showed dark and dilated veins, while the arteries looked normal, or a trifle contracted (Dr. Amadon). The liver dulness began at the fifth rib, and the edge of the organ could be felt, three fingers' breadth below the costal margin. Spleen reaches a hand's breadth below the ribs. Urine, 1.012, albumin, .1 per cent; many hyaline and granular casts, some with blood and fat on them; few coarse granular casts; numerous abnormal blood globules. Blood: red cells, 9,252,000; white cells, 10,600; hemoglobin, 110 per cent.

Ten days after entrance venesection was done, and six ounces of blood withdrawn; patient felt relieved by it. Two hours after the bleeding a blood count showed: red cells, 10,032,000; white cells, 5,800; hemoglobin cells, 120 per cent. Differential count: polynuclears, 80.8 per cent.; lymphocytes, 15.2 per cent; eosinophiles, 3.2 per cent.; mast cells, .8 per cent. Five normoblasts were seen while counting 500 leucocytes. Three days after, eight ounces more blood were withdrawn. A blood count of a drop taken from the spurting stream showed 9,580,000 red cells.

A month later she was discharged in about the same condition as at entrance. During this day she had an attack of pain, tenderness, redness and swelling in the toes of the right foot; relieved by salicylates.

December 9, 1899, she re-entered for similar symptoms, and physical examination showed practically the same condition. Spleen extends to navel. Red corpuscles, 11,352,000; white corpuscles, 8,300; hemoglobin, 105 per cent. Differential count of 400 cells showed: polynuclears, 77.25; lymphocytes, 18.75, eosinophiles, 2.75; myelocytes, 1.25. While counting these, two normoblasts and two microblasts were seen. The red cells were of uniform and normal size and well stained. Pulsation was marked in many of the superficial veins, and the veins of the fundus oculi were four or five times their normal diameter. The gastric contents on two occasions showed the absence of free HCl.

The case is very similar to one which I reported in the *Boston Medical and Surgical Journal* in December, 1899. I do not believe that we are here dealing with a genuine plethora, but with a venous congestion, the cause of which, however, remains a mystery.

Dr. J. C. Warren reported the following cases:

I. RESECTION OF A PORTION OF THE LIVER FOR ADENOCARCINOMA OF THE CYSTIC DUCT.

Dr. Warren showed a specimen of adenocarcinoma of the cystic duct which was removed by operation on October 10, 1899. The patient, a woman of fifty-seven, had for three months noticed a tumor in the right hypochondrium, which had given rise to considerable pain. There were no other symptoms suggestive of its origin. Incision was made in the right semilunar line, and a distended gall-bladder found, from which were removed thirteen large gall-stones. The probe showed a stricture of the cystic duct, which was found on exploration to be caused by a tumor about the size of an olive, consisting of a dense white fibrous growth. A fragment of the growth removed was found by Dr. Whitney to be carcinoma. The edge of the liver was now seized with double hooks and drawn forward and upward over the cartilages of the ribs. A wedge-shaped portion of the liver, including the gall-bladder and cystic duct, was removed by the Paquelin cautery knife, with little or no hemorrhage. As the lobe of the liver was dropped back into the peritoneal cavity, the cut edges fell into apposition. A drainage tape was placed between them, the end being brought out of the wound, which was closed in the usual manner with silkworm-gut sutures.

Pathological report.— Gall-bladder and surrounding portion of the liver to the extent of seven centimetres was removed. Gall-bladder was dilated; measured 10 centimetres, and contained thirteen facetted calculi. The inner surface was slightly thinned. The cystic duct was surrounded for about two and one-half centimetres by a dense, fibrous growth, which microscopical examination showed to be adenocarcinoma.

The patient made a good recovery; wound healed well. Since leaving hospital, she has had no return of symptoms, but was unable to be present.

II. FRESH FRACTURED PATELLA, SUTURED WITH CATGUT THROUGH THE PERIOSTEUM.

Dr. Warren showed a patient who had entered the hospital less than seven weeks before with a fresh transverse fracture of the patella. He operated about an hour after the injury; made a curved incision below the patella, washed out the joint cavity with hot salt solution and sutured the capsule with chromicized catgut. The wound healed solidly by first intention, and in three weeks passive motion of joint and massage were begun. In six weeks the patient walked alone and without crutches, and was able to bend the knee to a right angle.

III. TWO CASES OF RUPTURE OF QUADRICEPS EXTENSOR TENDON.

Dr. Warren also mentioned two cases which he had operated recently for rupture of the quadriceps extensor tendon. In one case the operation was performed four days after the injury; in the other, six weeks after. In both, animal tendon was used as the suture material to hold together the divided ends. In both cases the capsule of the joint was found ruptured in the same way as is seen in fracture of the patella. The lacerations in the capsule were sutured with catgut; those in the tendon with four stout kangaroo-tendon sutures. In the case operated on six weeks after injury the rectus muscle had contracted about three fingers' breadth from the patella, and could only be brought down after several transverse incisions had been made in its substance. In the case operated upon four days after injury there was no retraction whatever of the muscles. Both cases made excellent recoveries, and in a few weeks the patients regained perfect function of the extensor muscles of the thigh.

(To be continued.)

Medical Progress.

REPORT ON PROGRESS IN THORACIC DISEASES.

BY GEORGE G. SEARS, M.D., AND JOHN W. BARTOL, M.D., BOSTON.

TRAUMATIC CHYLOTHORAX.

Hahn[1] reports a case of traumatic chylothorax, which from his account appears to be the ninth recorded case of this affection following accident. As other possible causes he details carcinoma, tuberculosis, syphilis, filaria sanguinis and thrombosis of the left subclavian vein. The protected situation of the thoracic duct is described and the conclusion reached that injury to it can be done only by fracture of a vertebra or serious crushing of the surrounding tissues; in order for chylothorax to result it is also necessary for the costal pleura to be so injured as to allow passage of the chyle into pleural cavity.

[1] Deut. med. Woch., No. 25.

In his patient, a man run over by a wagon, there was, on first examination, fracture of two ribs on the left, evidences of injury to spine and dulness from the fourth rib downward on right. On the eleventh day this dulness suddenly increased, with marked dyspnea, which grew so rapidly worse that three days later the chest was tapped and 2,000 c. c. rose-colored opaque fluid drawn off. Tappings then became necessary for relief of symptoms every few days, averaging 3,000 c. c. of fluid, which after third tapping lost its reddish color (due to blood) and was milky white, presenting physical and chemical characteristics of chyle. In all, during twenty-six days, there were drawn off 29,650 c. c. and at autopsy the pleural cavity contained 7,000 c. c.

Of the nine reported cases, four died and five got well, and the conclusion is drawn from study of the cases that in those recovering the main duct was not ruptured, but some of its branches.

TUBERCULOUS PNEUMOTHORAX.

Drasche,[2] in a forty years' hospital service, has had under treatment 10,212 cases of phthsis, 6,686 males, 3,526 females; of this total there have been 198 cases of pneumothorax, 158 males, 40 females. A large proportion of the cases were in twentieth to thirtieth years of life; in 55 per cent. it was right-sided, in 44 per cent. left-sided, and in three cases bilateral. As immediate causes for the development of pneumothorax are to be reckoned violent coughing or any exertion which brings such a strain to bear upon the lung as can effect rupture of an existing cavity: thus many patients have been made perfectly conscious of the rupture by a sharp pain immediately after coughing, vomiting, defecation or lifting. As might be expected from the usual location of tuberculous process, a large proportion of the ruptures (71 per cent.) occur in the upper lobes.

In most cases the perforation is single and small (pin-head to hazel nut); when there is a pyopneumothorax the effect of the pus is to increase the destruction of lung tissue; an effusion may remain serous for months or become purulent within twenty-four hours of the rupture. Spontaneous closure of the perforation, when it takes place, does so probably by the spread of a pleuritic membrane.

Pneumothorax is one of the most serious complications of phthisis but is not necessarily fatal in itself, as is shown by evidences of perfectly healed lesions found post mortem, and also by those cases which have healed spontaneously under observation or as result of operation; still the treatment of it has remained, even in hospitals, mainly expectant, and attempts to promote healing by operative interference are prevented by prognostic pessimism.

It should not, however, be accepted as a fact that perforation necessarily means one further step in a fatal disease, but it should be borne in mind that phthisis, even of advanced degree, is capable of being arrested. Up to within a short time, practically the only indication for operative interference has been compression of the lungs and heart threatening suffocation, but at present there is a tendency to operate with the hope of promoting healing, a hope which is justified by statistics. Of the 198 cases, 158 were treated expectantly and 30 by operative interference; of the former, 5.5 per cent, and of the latter, 13.5 per cent., were discharged living; of the unoperated cases there were living up to six weeks and over, 13.2 per cent., of the operated, 37.9 per cent. Operation is always indicated in cases of threatening increase of dyspnea, cardiac oppression and thoracic tension. For puncture a medium-sized trocar should be used; with recurrence of symptoms puncture may be repeated or permanent drainage established. Pyopneumothorax is not necessarily a contraindication to operation. Many such cases are much improved subjectively and prolongation of life secured.

[2] Wien. klin. Woch, Nos. 45, 46 and 51.

POSSIBLE DANGERS OF THORACENTESIS.

The fact that evacuation of pleuritic effusion is often followed by rapid spread of tuberculous changes in the lung is emphasized by Pinquet.[3] The theory that a large number of all serous pleural effusions are tuberculous in origin is sustained, and, on account of the uncertainty as to serious results of tapping any given case, stress is laid on the advisability of avoiding interference if possible; and when the patient's comfort demands relief drawing off as little as possible; the theory being that the effusion keeps apart and at rest the two pleural surfaces loaded with tubercle bacilli, thus preventing further irritation and spread of the invasion.

Mollard, under whose direction the work was done, thinks the danger of permanent collapse of lung and pleural adhesion, as a result of non-interference, has been overestimated.

THE TREATMENT OF PNEUMOCOCCUS EMPYEMA.

O. Vierordt[4] speaks of the impression more or less prevalent in the profession that empyema from infection with the pneumococcus runs a more benign course than that due to other micro-organisms, and compares it with his own experience, which was almost exclusively confined to children. In 1897 he met with 16 cases of the disease, of whom five were surely due to the pneumococcus. Three of these died from extraordinarily severe complications. The following year he also treated 16 cases, with two deaths. Ten were due to the pneumococcus and one died. In other cases, a report of which is incorporated in the paper, an empyema so small as to be difficult of diagnosis reduced the patient to a critical condition, which improved after the evacuation of at times a few cubic centimetres of pus. These observations, he says, show exclusively the extreme variations in the malignity of the affection, which is little, if at all, dependent on the amount of pus. They further show how much risk one may run, in spite of their undoubtedly frequently benign character, and irrespective of the amount of the exudate, in delaying operation. At least so far as children are concerned, and probably also for older persons, there is no difference, from the standpoint of treatment, between the metapneumonic and other forms of empyema. A prompt and complete evacuation is necessary.

A RARE CASE OF INTERNAL THORACIC INJURY.

Kolbe[5] prefaces his account by the remark that it is certainly a rare occurrence for a single fall on level ground to produce in a healthy child a wound within the thoracic cavity that forthwith results in pneumothorax and a quickly spreading cutaneous emphysema

[3] Thèse de Lyon, 1899.
[4] Deut. Arch. f. klin. Med., 1899, Bd. lxiv.
[5] Deut. med. Woch., August 24, 1899.

of neck, face, chest, upper arm, back and abdomen. The patient, a seven-year-old girl, was pushed down by a companion, but was able to get up and walk home, when she complained of pain in her chest and was put to bed; during night the pain increased and a cough developed, with blood-stained expectoration. On the third day with a continuance of these symptoms there was noticed an increasing swelling in the right neck and upper right chest. Kolbe saw her first on the sixth day. He found a right-sided pneumothorax and a very extensive cutaneous emphysema extending on right side from cheek to mid-scapula behind, and five cm. below costal margin in front; there was marked dyspnea; temperature slightly elevated; no fractures or dislocations.

The emphysema, favored by paroxysmal attacks of coughing, steadily increased and the effect of a firm bandage over absorbent cotton applied to thorax was to increase it in uncovered portions, so that both eyes were closed and the face swollen out of all recognition. Slight improvement in the condition began five days after application of the dressing and it was re-applied in greater extent. Within a few hours of the re-application there ensued a very violent paroxysmal attack of coughing lasting half an hour and ending with the expectoration of a cherry stone embedded in a coagulum of blood and mucus; from this time on, rapid improvement and complete recovery in nine days. It then was discovered that she had been eating cherries at the time of the accident and the sequence of events is explained on the theory that with sudden inspiration the stone was carried to a branch of the right primary bronchus, became imbedded and held fast by a reflex spasm, and formed so complete an obstacle to the egress of air that a sudden blow over the portion of the distended lung that could not empty itself caused a rupture of lung tissue and also of the two pleural layers.

STAB WOUND FOLLOWED BY PNEUMOHEMOTHORAX AND PNEUMOHEMOPERICARDIUM.

Baracz[6] reports such a case, which ended in complete recovery. The wound, received in a duel, began at left border of sternum in fourth intercostal space and extended obliquely outwards four cm. ending just under nipple; by retracting its edges a wound in pleura one cm. long could be seen through which the air swished with each inspiration. The outer wound was closed and there was no interruption in its healing. Examination showed dulness and diminished respiratory murmur at base of left lung. Signs of fluid and air in pericardium were first positive on fifth day, when patient complained of a swishing sensation in cardiac region and there was audible at a distance of one-half to one meter, synchronous with systole, the characteristic sign first described by Morel-Lavalle as the water-wheel murmur. This lasted only one day, but there was later demonstrated a definite enlargement of cardiac flatness. On the eleventh day there was evidence of effusion on the right side, and on the seventh a very marked increase in the fluid in the left chest, which on exploratory puncture proved to be blood. Baracz concludes that this sudden increase was due to a secondary hemorrhage resulting from absorption of clot and increased activity of heart. In eight weeks patient was entirely well.

[6] Wien. klin. Woch., No. 47.

THE NIGHT AIR OF NEW ENGLAND IN THE TREATMENT OF CONSUMPTION.

Millet's[7] paper deserves more than a passing notice. He has cut loose from all traditions as to the awful dangers of draughts and night air in consumption, and furthermore has had the courage to act on his convictions. He reports five cases in which the essential part of treatment consisted in the patients spending the night in the open air, the beds being placed on an upper piazza or on a platform built over an L or a bay-window in their own homes in a New England shoe town. "Dampness and draughts are bugbears, and need not be considered for a moment. Many times these patients have found their bed coverings and night clothes wet with dew, and once in a while a summer rain has disturbed their healthful slumbers, but with no harm." During the day, the patients, if strong enough, followed their regular vocations, for example, working in a shoe shop; when not at work they have spent most of the time out of doors. Cough mixtures and sedatives were not given, almost the only medicines used being nux vomica and an occasional laxative. It was found that the more air the more appetite and less cough. All five cases showed remarkable improvement.

PROBLEMS IN TUBERCULOSIS STILL UNSOLVED.

No one interested in the subject should miss a paper by Trudeau,[8] which, although going beyond the limit of application to thoracic disease, still has so much of general interest that it is summarized here. The significance of virulence is alluded to; does it mean increased capacity for producing toxic effects, or simply increased capacity for rapid growth? Adenoid growths in nasopharynx are probably much more frequently the channel of access than is generally supposed. How may the problem of individual and racial immunity and insusceptibility be helped by a study of the discoveries: (1) that the resistance of chickens to the human bacillus can be overcome by using for inoculation bacilli that have been previously cultivated in celloidin capsules, inserted and kept for some time within the peritoneal cavity of these birds, — this method allowing access of the body fluid to the bacilli and the escape of toxins into the circulation, while preventing egress of the bacilli, — and (2) that the resistance of guinea-pigs to avian bacilli yields, when these bacilli have been passed through a series of rabbits, animals which are susceptible to the avian variety. Does the tuberculous individual, like the syphilitic, acquire an immunity during the progress of the disease? Prophylaxis must be carried along the lines of establishment of sanitaria and the education of the masses as to the sources of danger and methods of prevention. But it is in the details of these very matters that we are in need of further investigation.

As aids to clearing up obscure diagnosis, the x-ray and tuberculin test are destined to gain in value by being more frequently used. The mechanism of the tuberculin reaction needs further investigation as to the best method of applying it, its exact value, its discrepancies and its possible dangers. The latter have probably been over-estimated, and while it is apparently true that the "reaction" is caused by an intense hyperemia set up in the various tuberculous foci, and

[7] Maryland Medical Journal, January, 1900.
[8] Johns Hopkins Hospital Bulletin, July, 1899.

a liberation therefrom of the toxins which cause the characteristic symptoms of the reaction, there is no proof at present that the disease is spread, or new foci established. The stronghold of treatment will continue for the present, at least, to be in climatic and open-air measures, and further investigations as to methods and modification will be of much value.

Little of practical avail has yet been accomplished in the attempts to produce immunity or cure by inoculation; the outlook, however, in spite of certain inherent difficulties, is not hopeless. Just now the most promising line of research seems to be the possibility of establishing immunity by inoculation with living cultures of attenuated bacilli.

(To be continued.)

Reports of Societies.

SUFFOLK DISTRICT MEDICAL SOCIETY. SECTION FOR OBSTETRICS AND DISEASES OF WOMEN.

C. H. HARE, M.D., SECRETARY.

Regular meeting Wednesday, November 22, 1899, Dr. R. A. Kingman in the chair.

Dr. Frederick W. Johnson read a paper entitled

STEAM IN THE TREATMENT OF CHRONIC, HYPERPLASTIC AND SENILE ENDOMETRITIS, PUTRID ABORTION AND PUERPERAL SEPSIS.[1]

Dr. Burrage: I have not had personal experience with the method, but should like to say a word with reference to it. I have seen it used by Dr. Johnson, and it seems to me it is a most valuable addition to our therapeutic resources. It is, however, one that I somewhat fear, for I have felt that it is hard to control; that is, I think that Dr. Johnson has pointed out that if a short application is to be made that the temperature of the steam must be kept near the maximum, 212°, and if a long application, the steam may be partly condensed, but even then, it seems to me, that theoretically, and I must speak of it on theoretical grounds entirely, it is difficult to control the temperature, and to limit the cauterizing effect in any given case. Of course it is no argument against steam to say that it will obliterate the uterine cavity; we know that excessive curettings will do practically the same thing. I saw a patient to-day whose uterine cavity is not entirely obliterated, but partially so, as a result of a curetting done eighteen months ago by a friend of mine in a neighboring town, and she has had amenorrhea virtually ever since. It seems to me there is a very distinct danger from the steam, and that is in the septic cases if there happens to be a perforation of the uterus. Of course, in cases of criminal abortion there may be a perforation, and there may be in cases that have been curetted. We all know how soft the uterine tissue is in septic cases, and how easy it is for a curette to slip through. There was a fatal case recently reported in one of the New York journals where the steam got into the peritoneal cavity through a perforation in the uterus and the patient died.

Then, again, in certain cases, where there is very abundant tissue in the uterus, it seems to me that steam ought to be used as a supplementary measure rather than the chief measure. I curetted a case last Friday where the uterus was large, and there was much tissue in the cavity, some of the pieces as large as my little finger, and I fail to see how it would be possible to destroy all that tissue with steam without destroying the uterine wall in places where the tissue did not occur, near the cervix for instance, and if the tissue were destroyed, it seems to me not a surgical procedure to destroy it and leave it to come away slowly. To my thinking, in those cases the steam does not take the place of the curette or curette forceps or some similar instrument for removing tissue directly. As a supplementary measure, it seems to me it has great advantage. In senile endometritis it is a very good measure, and wherever we want to obliterate the uterine cavity, but the matter of the lack of control is, in my mind, a very strong argument against its use, and I cannot believe that it is going to take the place entirely of the curette. I think that careful curetting, using in addition to the sharp curette with flexible shank, a very small Simon curette to go into the horns, is the most rational method of treating cases of endometritis, and then following the curetting, as I do still, although it sounds old-fashioned, by swabbing with pure carbolic acid. Pure carbolic is an antiseptic, and it will go into the nooks and corners of the uterus and cauterize any islands of tissue that may be left. I do not feel there is the same danger of a small amount of fluid going through a patulous tube or a perforation, though I do not use carbolic when perforation is suspected, as there is danger of a vapor going through. Steam is a valuable agent in the cases that have not been relieved by curetting. We see patients who have had several curettings and have not been relieved, and I think these would be good cases for steam, and in senile endometritis, and in certain septic cases, it seems to me, it would be of great advantage, but I should hesitate to use it in all cases instead of the curette. I think curetting properly done is a wiser and much better method.

Dr. Johnson: I should like to say in reference to the temperature of the steam that it cannot be any hotter than 212° anyway, and by repeated experiments with a thermometer inside the uterus while I was steaming the temperature depended entirely upon the amount of moisture inside the uterus. If the uterus was dry you could get 212° easily. With the apparatus I described you get almost no pressure. Now, in reference to the death Dr. Burrage spoke of, if he will look up that article again he will see that the steaming was done with the Russian apparatus, by which you can get enormous pressure, and I should think with an apparatus of that kind you might do at times a good deal of harm. In saying that the temperature was sometimes 104° to 110° C., I was quoting. I do not advocate that. I advocate the use of the steam as it comes out of an ordinary throat atomizer, and practically there is no pressure at all, only what you get from its being put through the small tube that goes into the uterus. Neither did I write the paper with the idea that steam was to take the place of the curette in every particular. I used steam after reading articles of prominent men who had used it extensively, to see what it could do.

[1] See page 269 of the Journal.

In organizing, the Watertown, Mass., Board of Health has chosen Dr. B. F. Davenport as chairman.

Recent Literature.

The Mechanics of Surgery. By CHARLES TRUAX. Pp. 1,024, with 2,381 illustrations. Chicago. 1899.

The character and purposes of this somewhat unique book are perhaps best described by quotations from the author's preface, which states that its aim is to illustrate and describe such mechanical appliances as research and experience have proved to be suitable, or best adapted to the purposes for which they are designed; to furnish information relating to surgical instruments and appliances which is not only from the point of the maker but also from that of the user of such apparatus. Extensive experience in both fields has apparently fitted the author to fulfil this task. It is intended to furnish the doctor with information which will enable him to select and order any instrument or appliance, be it a scalpel, stethoscope, electric battery, or an artificial leg, without depending upon a surgical-instrument catalogue or dealer, the former giving, as a rule, no other information than the name and price, the latter often buying and selling the goods as a hardware dealer does common tools. It also tells what is commonly required for any particular operation or ordinary clinical investigation. No attempt has been made to include all instruments, but only those in general use which are accepted as the standard patterns, or recommended by good authority. The introductory chapter contains a few facts relating to the history of surgical instruments. Then follow some details of construction and care of instruments. Next the subject of mechanical aids in clinical diagnosis, for example, microscopy, urinary analysis, blood examination, etc. The next chapters are devoted to hospital equipment, including sterilization, anesthesia, and other subjects. Following are the instruments, appliances and dressings necessary in general work in minor and major surgery. These are fully tabulated and described. Regional and special surgery is assigned to its specific chapters. Two lists are furnished, one intended for hospital work, the other as a guide to operative work in private practice. The writer has tried to make these lists complete to the last pin and bandage. The concluding chapter, on prosthetic surgery, is devoted to a subject usually neglected, and on which the author has spent considerable thought and time in collecting data. The chapter on orthopedic appliances is more satisfactory than is usual with such descriptions.

The book is profusely illustrated, well arranged, and contains much information which will be for the benefit and profit of its readers. Many ways are readily suggested in which its data can be utilized. Its chapters treat of subjects, a knowledge of which is usually acquired only by years of personal experience and extended observation.

An American Text-Book of Surgery for Practitioners and Students. Edited by WILLIAM W. KEEN, M.D., LL.D., and J. WILLIAM WHITE, M.D., Ph.D. Third edition, thoroughly revised and enlarged. Pp. 1,228. Philadelphia: W. B. Saunders. 1899.

This book is well known to the medical public. The authors state that nearly 29,000 copies have been sold, and that it is used as a text-book in more than one hundred medical colleges. It has been revised to keep the book fully up to date. In regard to the general character and appearance it is hardly necessary to speak in detail. It resembles its predecessors. Among the new features are the subjects of serum therapy, leucocytosis, the Kralein system of cerebral localization, the congenital hip operations of Haffa and Lorenz, the Allis method of reduction of hip dislocations, lumbar paracentesis, the French method of forcible correction of Pott's deformities, some additions to gastric surgery, the surgery of typhoid fever, skiagraphy, advances in surgery, the surgery of the ureter, and some of the more recent changes in antiseptic technique. The sections on appendicitis, fractures and gynecological operations have been revised and enlarged. The chapters describing the surgery of the eye and ear have been omitted in this edition.

The book as it now appears fully attains the high standard of the earlier editions. The subject of surgery seems to be very well covered, at least as thoroughly as is possible to do in a work of this character. The authors who, in addition to its editors, have contributed to the volume are Drs. P. S. Conner, F. S. Dennis, C. B. Nancrede, R. Park, L. S. Pilcher, N. Senn, F. J. Shepherd, L. A. Stimpson, and J. C. Warren, a list which surely ought to attract attention to and arouse interest in the book. In reviewing it one thought was suggested several times before the task was completed. It was that perhaps for the average reader at the end of a day's work the book would be more restful and convenient if published in two volumes.

Imperative Surgery for the General Practitioner, the Specialist, and the Recent Graduate. By HOWARD LILIENTHAL, M.D. Illustrated. New York: The Macmillan Co. London: Macmillan & Co., Ltd. 1900.

This book was written for "the practitioner of general medicine, who rarely takes up the scalpel, the specialist, whose path seldom leads him to the operating-room, and the recent graduate, who though versed in the lore of books and lectures, has seen but little surgery at close range." It deals only with diagnosis and the treatment of conditions necessitating immediate operative measures. It presupposes the absence of a surgeon, and the impossibility or inexpediency of moving the patient, or waiting for expert assistance. For purposes of clearness and directness, the author claims to have described only one good method of relief in each case.

The book is well published, with unusually large, clear type, and is beautifully illustrated. It reminds one of that attractive volume, the "Aseptic and Antiseptic Surgery" of Gerster. The text is systematically arranged and indexed. The story is interestingly, at times graphically, told. It is attractive from the implied success of each procedure and its freedom from doubt and uncertainty. Many valuable suggestions and expedients for use in emergencies are introduced. Minuteness of descriptive detail in many instances is noteworthy. In regard to some of the operative procedures recommended, it might be a matter of opinion as to the one best adapted for an emergency operation to be performed by one unaccustomed to surgical work. However, the book seems to fulfil very well the object of its author. He is to be congratulated on the success of his efforts and his contribution to medical literature. The book shows en-

thusiasm and interest, much time and thought, and a desire to produce the best. The text covers 412 pages, and contains 153 illustrations.

Collins and Rockwell's Physiology. A Pocket Text-Book of Physiology. By H. D. COLLINS, M.D., Assistant Demonstrator of Anatomy, and W. H. ROCKWELL, Jr., A.B., M.D., Assistant Demonstrator of Anatomy, College of Physicians and Surgeons, New York. Pp. 316. Philadelphia: Lea Brothers & Co. 1899.

As you read this book you will agree with the authors' statement in the preface, when they remark that they make no claim to original research. When you have finished the volume you will be inclined to add that they should have included in this remark originality of any description. In short, everything is culled from the various well-known text-books and simply boiled down, not to such an extent as a "quiz compend" perhaps, but still enough to establish a distant relationship to these doubtful blessings.

The book to a medical student is not very valuable, but it ought to make a very good high-school class book. Unfortunately (?) it does not contain any garbled facts about the poisonous and atrocious effects of alcohol and tobacco. Consequently it is a pernicious (?) book and is debarred from being adopted as a school book. If "brevity is the soul of wit," then the book scintillates with witty remarks. We do know that the mechanism of rhythmical contraction is contained within the heart itself. This joke explains the cause of the heart beat! Internal secretion, ductless glands, and the phenomena of inhibition are short comedies.

In favor of this book it may be said that it contains no *bad* physiology or antiquated hypotheses. It is nicely bound, well illustrated with clean cuts, and is printed on good paper.

Notes on the Modern Treatment of Fractures. By JOHN B. ROBERTS, A.M., M.D., Professor of Surgery in the Philadelphia Polyclinic. Pp. 162, with 39 illustrations. New York: D. Appleton & Co. 1899.

This interesting and suggestive little work contains the result of the investigations and study of the author of several subjects connected with fractures which have especially attracted his attention. The text of these brochures has been revised to correspond with Dr. Roberts's present ideas. The subjects discussed are all of importance and interest, particularly to those actively engaged in treating such lesions. They represent the complications rather than the routine work; for example, the question of an exploratory incision in the treatment of "closed" fractures and dislocations; subcutaneous nailing in fractures, with unusual tendency to displacement; fractures on the lower end of the radius, with forward displacements, etc. The book will repay a careful perusal. It contains several instructive illustrations.

Essentials of Physical Diagnosis of the Thorax. By ARTHUR M. CORWIN, A.M., M.D. Third edition, revised and enlarged. Philadelphia: W. B. Saunders. 1899.

This is the third edition of Dr. Corwin's little book. Although somewhat enlarged, it is still open to the same criticism which has been made on former editions, that in the effort to epitomize and condense, the essentials and non-essentials have received the same amount of emphasis. There is no perspective presented to the student. He meets a mass of facts which seem of equal value and have no apparent connection and which he must learn by an effort of memory and not through being taught the logical dependence of the signs on the conditions which cause them. The essential facts are all given, and in the hands of a competent teacher the book would be useful.

Surgical Nursing. By ANNA M. FULLERTON, Clinical Professor of Gynecology in the Woman's Medical College of Pennsylvania, etc. Third edition, revised and enlarged. Pp. 294, with 69 illustrations. Philadelphia: P. Blakiston's Son & Co. 1899.

This little book is one of the best of its kind. It is attractively and well written. The style is concise. It is well arranged. The data relating to aseptic and antiseptic technique incorporated in its pages are accurate. It treats more especially of nursing in abdominal surgery and in gynecological practice, but the principles of aseptic surgery in general are well presented with the most essential details. If the nurse does her work as directed in this book, it will be well done. The present edition fully equals in excellence its predecessors.

A Text-Book of Diseases of Women. By CHARLES B. PENROSE, M.D., PH.D., Professor of Gynecology in the University of Pennsylvania; Surgeon to the Gynecean Hospital, Philadelphia. Third edition, revised. Philadelphia: W. B. Saunders. 1900.

This third edition follows so closely upon the heels of the second that but little change has been necessary. The book is, as has been said before in these pages, essentially a text-book for students. It is clear, concise and thorough, and considered as a text-book for students, it is perhaps the best exponent of the modern school of operative gynecology which we have.

Golden Rules of Physiology. By T. WALKER HALL, M.B., Ch. B. (Vict.), and J. ACKWORTH MENZIES, M.D., C.M. (Edin.). Golden Rules Series, No. VI. London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd. 1900.

Nothing new, nothing original, except the size, which is, roughly speaking, 7 x 10 x .5 centimetres, and into this small space is crammed a lot of useful physiological hints. The book was written chiefly for unfortunates "on the threshold of examination." As a simple "refresher" for the memory it may be of some use; otherwise it has no value whatever.

A Pocket Medical Dictionary. Giving the pronunciation and definition of the principal words used in medicine and the collateral sciences, etc. By GEORGE M. GOULD, A.M., M.D., author of the Illustrated Medical Dictionary, etc. Fourth edition, revised and enlarged; 30,000 words. Philadelphia: P. Blakiston's Son & Co. 1900.

Dr. Gould's dictionaries are deservedly popular. The total circulation, as stated in the preface to this fourth edition of the Pocket Dictionary, has now passed 100,000 copies. The small volume before us is compact and attractively bound with flexible covers. It should continue to fill a place in this its somewhat enlarged and elaborated form.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, MARCH 15, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.

PROGRESS IN MEDICAL TEACHING.

A MEDICAL meeting of much more than usual interest and significance, to be published in full later, was held last week under the auspices of the Boston Society for Medical Improvement, on the general subject of "Medical Teaching." That a very active movement toward the improvement of teaching in medicine has developed within the last few years has been sufficiently evident to those who have followed the course of events, and it appears equally evident that positive results are to follow the introduction of the new methods. It was the purpose of this meeting to outline the changes which have been suggested, and to excite discussion as to their merits or shortcomings. In both of these objects the meeting proved a decided success, as shown by the perfectly clear presentation of the subject matter, and the extended discussion by many men more or less personally interested in the development of medical education.

As not infrequently happens, however, it was apparent that the exact meaning and scope of the proposed changes was not clear to the minds of all present, and that a certain confusion existed as to the various methods of teaching which formed the basis of discussion. There was a tendency to regard methods as antagonistic, rather than supplementary and directed to precisely the same end by somewhat different means. Nothing could be more unfortunate for reform than this setting up of two systems of teaching as rival claimants, one of which must succumb if the other be adopted. As a matter of fact, the adoption of one should mean the acceptance of the other if either is properly understood.

Three general changes in method were suggested at the meeting, and presented briefly by Dr. W. T. Councilman, Dr. H. L. Burrell, Dr. A. H. Wentworth and Mr. W. B. Cannon. The speakers were entirely in agreement in maintaining that the teaching of the future must be directed toward the intellectual development of the individual student, that the student must do his own thinking and draw his own conclusions, and that the instructor must act rather as a court of last appeal than as a painstaking director of the student's mental processes. For these reasons the extreme use to which the so-called didactic lecture has been put was discouraged as directly leading to intellectual dependence. About this there can be no confusion. The didactic lecture, as a means of medical instruction, must resign its place of pre-eminence, and assume, as we have frequently insisted, a position of less prominence, but of greater dignity, because more in keeping with the sort of instruction it is designed to supply. Our correspondent on another page is inclined to defend the old régime on somewhat sentimental grounds, but this is not argument, and some of us may even be inclined to think that we learned in spite of, and not because of, those same didactic lectures. In any case, whether the old method was bad or good, we are certainly not disloyal to our former teachers in demanding better things for the future. We can hardly progress by looking backward.

Admitting the desirability of the inductive method, how is it practically to be attained? This is the question which the various speakers set themselves to answer. Dr. Councilman spoke on the course in pathology at the Harvard Medical School, as carried out under the new plan of concentration. We have already commented in considerable detail on the theory of this system of teaching, and Dr. Councilman's remarks on the practical working of the plan showed, in the course in pathology at least, that the hopes of its projectors have been amply borne out. The students were made self-reliant, developed a highly gratifying enthusiasm, and passed a good examination. The lecture was in general subordinated to more direct means of instruction.

Dr. A. H. Wentworth spoke on section teaching, a résumé of his recently published paper in this JOURNAL for February 15, 1900. There was a very apparent tendency on the part of some of those who discussed this paper to misinterpret its significance and to question its originality. As we understand Dr. Wentworth's position, he claims no originality for the method, which, of course, has always been used wherever medicine has been taught. His contention simply is that it is the best method of teaching clinical medicine, and that it is possible to apply it to large classes. The application of a method recognized as valuable is Dr. Wentworth's service. He has demonstrated that it may be applied, not only to classes of ten or twenty, but to classes of a hundred or more, in such a way that each student may examine in the course of a year a large number of actual cases. He has worked out a plan for the Harvard Medical School which, in principle, may be used at other institutions. This, so far as we are aware, has not been attained before in anything like the completeness that Dr. Wentworth's plan of rotation renders possible.

Mr. Cannon's contribution to medical teaching, as many of our readers know, consists in the application to medicine of the "case system," which for many years has been used with success in the teaching of law. A detailed account of this method, which certainly demands attention, will be found in Mr. Cannon's original paper, published in our issue of January 11, 1900. The disputants at the meeting in question were again rather vague in the discussion of this communication, and were apparently not clear as to the exact meaning or the exact position in the curriculum of this "case method." In the first place, Mr. Cannon also claims no other originality than one of application. His plan provides a method of studying medi cine systematically and in a natural way by the use of case histories. There is no conflict with the system of "section teaching," as was implied in the discussion; it is designed rather to fill out the inevitable gaps left by any method of instruction which looks to patients alone for the material of study. It is therefore supplementary rather than antagonistic to the section teaching plan, and as such has a place of the greatest significance in the general scheme of teaching, as experience has already shown. The "young gentleman from the Medical School," as our correspondent terms Mr. Cannon, has himself had a large experience in teaching, and is, no doubt, quite aware of the fact that his ideas are not revolutionary, and that there is still some good in old methods. His contribution, properly understood, remains one of the most significant and fruitful that has ever been presented to a body of medical teachers.

The general ferment now going on is sure to result in marked improvements; of that the most conservative of us can have no doubt. We suspect the final outcome will be a system of teaching in which the didactic lecture will still be permitted to hold its head erect, and also one in which the principles of all the new ideas will find a definite abiding place, modified only to meet the requirements of advancing knowledge. Because we have learned in the past, is surely no reason why our successors should be forced into the paths we have laboriously travelled, if better ones may be found.

CHRISTIAN SCIENCE A MENACE TO THE PUBLIC WEAL.

It was stated last week that a child had died at Somerville under the treatment of a Christian Scientist, who gave the cause of death as pneumonia; that the Board of Health refused a burial certificate without a proper death certificate from an accredited physician, as required by law; that after much controversy a physician was allowed to view the body and burial was permitted. It now appears that the City Physician of Somerville was ultimately allowed by the friends to see the body, after several refusals; that he gave a death certificate, cause of death unknown, and secured a culture for bacteriological examination; that it is now shown that the child died of diphtheria and not of pneumonia.

It is time it should be made plain whence comes the validity of a death certificate, and what is required for the issuance of a burial permit. The State and individual communities, for the protection of their citizens, require certain duties of physicians; these duties are in the nature of police service. Among them are the reporting of contagious diseases to boards of health, the signing of death certificates, and the granting by boards of health of burial permits. The essential importance of the correct discharge of these duties for the prevention of the spread of disease, for the saving of life, for the control of crime, for the approximately proper preparation of vital statistics, is so evident that it seems hardly necessary to dwell upon them. And they are essentially important not to the physician as a professional man, but to the people at large. It is the people and not the physician who will suffer if these duties are overlooked or ignorantly and carelessly attended to.

We have no intention of discussing the question whether Christian Scientists should be allowed to suffer and die unnecessarily if they so prefer, or even to help their relatives and friends to do so, but how far they are to be allowed to endanger the community at large.

What may be expected from them is shown in this Somerville case, as in others previously on record. It is shown again most clearly in the testimony before the Committee on Hygiene of the Maryland Assembly, printed on another page of this issue.

THE QUESTION OF PRIZES.

It is a matter worthy of note that the Samuel D. Gross prize of $1,000 has not been awarded this year, owing to the fact that no essay submitted was considered sufficiently meritorious. This is a fate which we continually see overtaking prizes of less value from which we are led to the belief that the standard set for work worthy of consideration is very high. No doubt this is, in a measure, the case, which is after all merely a confession that really able men are not apt to compete. As we have recently taken occasion to point out, prizes are yearly increasing in number and decreasing in value, until they have come to lose a great part of their interest. When, however, a prize which in addition to what honor it may bring also offers the successful writer $1,000, and stills finds no one of sufficient ability to present an essay, on a subject, too, in which thousands of men are interested, it would seem that but one conclusion is open to us, namely, that such a method of stimulating research is wrong in theory and unsuccessful in practice. It is to be hoped that in the future men with money to expend will perpetuate their names in some other way than through the establishment of prize funds, of which we have already enough and to spare.

MEDICAL NOTES.

THE PLAGUE SITUATION. — During the last week of February, there were 411 deaths from plague in Calcutta. The viceroy, Lord Curzon, addressing some of the plague-stricken patients, said he considered it his duty to visit all the quarters of the vast dependency committed to his charge. In spite of the fact that several new cases have occurred in Honolulu, the situation is very decidedly improved. At Hilo no new cases have been found and none are expected to occur. A suspicious case recently discovered in San Francisco has proved to be genuine plague.

DEATHS FROM TUBERCULOSIS IN DENVER, COL. — Tuberculosis is reported to have caused more deaths in Denver, Col., during 1899 than any other disease. The annual report of the Health Department shows that the tuberculosis mortality was 536 for the year ending December 31st, 31 more than during 1898, and 47 more than during 1897. Eighty-eight of the 489 deaths from consumption in the same city during 1897 were of patients who had contracted the disease in the State, 99 out of 505 deaths in 1898, and 58 in 1899.

A HOSPITAL IN NEED OF MONEY. — We are informed that the Hospital for Sick Children, London, the oldest institution of its kind in England, is urgently in need of money to continue its work. If aid is not forthcoming, the hospital must be closed. This is suggestive of the situation in England with regard to home charities, and the diversion of benevolence temporarily into other channels.

SMALL-POX IN MISSISSIPPI. — A violent outbreak of small-pox is reported from the Jonesville District, Miss. About 100 deaths occurred during a period of six weeks, and difficulty has been experienced in burying the dead. Medical attendance has been inadequate and the neighborhood is in a state of demoralization. Every effort is being made to check the spread of the disease.

PROFESSORSHIP OF MEDICINE IN EDINBURGH. — The professorship of medicine, or the practice of physic, in the University of Edinburgh, rendered vacant by the death of Sir Thomas Grainger Stewart, is said to be worth about £1,050 a year.

TYPHOID FEVER IN LADYSMITH. — Mr. Frederick Treves, surgeon of the British forces in South Africa, has reported that immediately after the relief of the town there were 800 cases of typhoid fever among the inhabitants.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, March 14, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 106, scarlatina 48, measles 70, typhoid fever 8.

TYPHOID FEVER AT HAVERHILL, MASS. — An epidemic of typhoid fever is reported from Haverhill. In the last few weeks many cases of the disease have appeared. In all there are 25 cases in the city, and all are confined to houses connected with the water supply of Kenoza Lake. The Board to-day made known their findings in the following communication to the Water Board. "It is the judgment of the Board of Health, after a careful investigation, that the present excessive sickness from typhoid fever is due to the pollution of the water supply coming from Kenoza Lake, and that the source of its special infection is the leaking cesspool connected with the Hale Hospital. Its contents are discharged on the surface of the ground, and have been carried by recent heavy rain storms and also by a system of stone drains, into an eight-inch Akron pipe for the removal of surface water from the street on the northerly side of Kenoza Ave. This pipe, passing under the roadbed, connects, presumably, as there is no other visible outlet to it, with an old stone drain, or covered water course, which discharges into an open trench about 150 feet distant, thence over the surface of the ground, about 200 feet into the northwesterly side of the Lake."

STATISTICS FROM NEWTON, MASS. — The number of cases of diphtheria in Newton decreased during the month of February. On the 1st of February the Board of Health had under observation 29, while in the mortality statistics for February there are only seven cases of diphtheria. During February there were 40 deaths, and the average death-rate per thousand for the month was 17.39, as against 17.83 last year. There are 19 cases of scarlet fever at present and 14 were reported during the month.

A BILL TO RESTRICT THE USE OF ARSENIC. — The Committee on Public Health of the Massachusetts Legislature has under consideration a bill to restrict the use of poison as a coloring matter. The bill is aimed at arsenic, and seeks to prevent the manufacture and sale of textile fabrics and papers containing that mineral. An exception is made of dress goods containing no more than one-tenth grain of arsenic to the square yard.

REMONSTRANTS AGAINST THE BILL TO RESTRICT VIVISECTION. — President Eliot and Bishop Lawrence appeared among others at the meeting on Tuesday before the Committee of the Massachusetts Legislature and spoke against the bill to restrict vivisection. Dr H. P. Bowditch opened for the remonstrants.

INFLUENZA IN BOSTON. — The death-rate during the past week has been unusually high, owing in part to the prevalence of influenza. Ten deaths attributable to influenza have occurred. There has been a considerable epidemic of the disease at the Long Island Hospital, Boston Harbor.

A MEASLES WARD NEEDED. — The attention of the public is being directed by the Trustees of the Boston City Hospital to the great need of a ward for measles in the Contagious or South Department of the Hospital.

NEW YORK.

A Veterinary School for New York. — At a meeting of the Council of the University of the City of New York, held March 5th, a memorial was framed requesting the State authorities to adopt the Veterinary Department of the University (the New York American Veterinary College), for the educatjon of veterinarians in the section of the State in which New York City is situated. That city, the memorial claimed, was better adapted to the successful maintenance of a veterinary school than any other locality, especially on account of the advantages which it afforded in the matter of anatomical and clinical study.

Shortening of Term of Service in the Philippines. — Dr. D. H. Morgan, of the United States Navy, now in New York, who recently arrived from Manila, has, by request, sent to the Navy Department in Washington a report in which he strongly recommends that the terms of service of officers and men in the naval service on duty in the Philippines shall be made two instead of three years. The climate there he regards as very enervating, and he has found that its effects are seriously felt in the second, rather than in the first year; so that the men cannot stand the strain of continuous service there.

United States Revolver Association. — The United States Revolver Association was organized on March 5th, when Dr. Reginald H. Sayre was elected President, and Dr. Calvin Thayer Adams a member of the Executive Committee. Dr. Sayre, who is inspector of carbine and pistol practice in Squadron A of the New York National Guard, has won a large number of trophies in various contests by his skill in marksmanship. The Association has decided to accept a challenge received from France, and it is expected that the match will be shot in May in this country and in Paris at the same time.

A Unique Claim. — A claim of $2,386, arising from the importation of small-pox into the State of New York by the Joshua Simpkins Opera Company, was filed at Albany on March 10th, by the city of Geneva. A mild epidemic of small-pox in that section originated with a member of the company, who was taken ill at Ithaca. The company went to Geneva, where its twenty-six members were placed on the steamer *Onondaga* and quarantined on Seneca Lake for several weeks. The city's claim is for the cost of the quarantine.

Bills Passed by the Assembly. — Other bills recently passed by the Assembly are Dr. Henry's bill to shorten the hours of drug clerks, which is said to be free from the objectionable features of the one with the same object in view passed by the Legislature last year; and a bill authorizing New York City to appropriate $50,000 to aid in the erection of a monument to martyrs who perished in the prison ships in New York Harbor during the Revolutionary War.

State Hospital for Crippled and Deformed Children. — On March 9th the Assembly passed a bill establishing the New York State Hospital for the Care of Crippled and Deformed Children, and appropriating $10,000 for the purpose. The incorporation of the institution, one of the directors of which is Jacob A. Riis, was approved by the State Board of Charities.

A Fatal Case of Pemphigus. — A fatal case of pemphigus was reported at Bellevue Hospital during the past week. The patient was a young man of twenty-four, and the diagnosis was vouched for by Dr. George T. Jackson, the well-known dermatologist. A death from this skin affection, except in the form incident to infantile syphilis, is so rare as to be almost unique.

Miscellany.

INFLUENZA AND PNEUMONIA IN NEW YORK.

Aside from pneumonia, there have been fewer deaths reported from influenza since January 1st than during the same period of 1899, but the number of deaths from pneumonia has been considerably greater. The following tables, taken from the records of vital statistics, show the number of deaths from influenza and from pneumonia, by weeks, in the two years:

Influenza.

1899.		1900.	
Week ending Jan. 7	74	Week ending Jan. 6	6
" " " 14	53	" " " 13	5
" " " 21	31	" " " 20	3
" " " 28	27	" " " 27	4
" " Feb. 4	16	" " Feb. 3	7
" " " 11	19	" " " 10	8
" " " 18	14	" " " 17	11
" " " 25	16	" " " 24	29
" " March 4	11	" " March 3	29

Pneumonia.

Week ending Jan. 7	182	Week ending Jan. 6	141
" " " 14	143	" " " 13	183
" " " 21	124	" " " 20	156
" " " 28	140	" " " 27	160
" " Feb. 4	124	" " Feb. 3	158
" " " 11	138	" " " 10	184
" " " 18	151	" " " 17	203
" " " 25	157	" " " 24	256
" " March 4	151	" " March 3	261

While the deaths from pneumonia reported during the week ending March 3d reached the extremely high figure of 261, the number of deaths from pulmonary tuberculosis was comparatively small for this season of the year, namely, 106. The general mortality in the city during the week named represented an annual death-rate of 26.76, against 20.26 for the corresponding week of 1899.

CHRISTIAN SCIENCE: A MENACE TO THE PUBLIC HEALTH.

In Maryland the Christian Scientists appeared before the Committee on Hygiene of the Legislature in opposition to the proposed bill regulating the practice of medicine. From a report of the proceedings we make a few excerpts concerning which comment is unnecessary:

Dr. Samuel T. Earle asked Mr. Hammond how he discriminated between infectious diseases and those that were not infectious. "The power of God," said Mr. Hammond, "is the same always. We do not believe in infectious diseases, and a person, if a Christian Scientist, could not contract such diseases." Dr. Earle asked whether the method of treatment would be altered for an infectious disease, and Mr. Hammond replied that it would not. Dr. Edward Brush said it was unnecessary to ask the gentleman any further questions, as he had practically admitted that he could bring a patient with the small-pox into a room with other persons, or send a child with scarlet fever to school.

Dr. Earle asked Mrs. Linscott how she could distinguish diphtheria from tonsillitis. Mrs. Linscott laughed heartily and said: "All diseases are the same to us, and we make no microscopic investigations; but I could easily distinguish." Dr. Earle insisted upon knowing by what means, and Mrs. Linscott remaining silent, Mr. Hammond answered in sonorous tone, "Through the power of Almighty God." Mrs. Linscott stated that in a community of 500 people, all of whom were Christian Scientists, such a thing as diphtheria would be impossible, and there would be no necessity for any health department, as the community would be exempt from disease.

Dr. Fulton said the course of medicine of the Scientists was two weeks, according to their own books. He read of a little child who had a terrific toothache and was so completely cured in one night by a Christian Science teacher that not only did the pain leave her, but the cavity in the tooth became filled up, and this was without any physical treatment. The Christian Scientists all exclaimed that this was perfectly true.

Another incident read by Dr. Fulton was to the effect that a lady who had been horribly burned was sufficiently improved to go out the day after the accident. Several of the delegation said they knew this lady.

Another article read referred to a schoolboy who could not do his fractions until aided by Christian Science, when they at once became easy.

Mrs. Linscott remarked to Dr. Fulton, "No wonder the power of God surprises you!"

Dr. Brush read a letter from a member of the Health Department in Buffalo, stating that the sect of Christian Scientists should be suppressed, as they were a menace to the public health.— *Philadelphia Medical Journal.*

PLAGUE AT MENGTSZ YUNNAN, CHINA.

FROM the *Journal of Tropical Medicine* we learn that, with the exception of 1899, plague has been epidemic in Mengtsz Yunnan (population 12,000) every year for the last thirty years, or since the Mahomedan rebellion. The disease ordinarily appears about June, and finishes early in August — practically the rainy season. The annual plague mortality in the town and surrounding villages would range from 300 to 1,400. In Mengtsz rats are phenomenally abundant. Strange to say, cats are very rare and are much valued, fetching high prices. The Chinese say the cats die of plague caught from the rats. As Chinese cities go, Mengtsz is clean. Every year, just before the outbreak of plague, all street rubbish is removed; domestic rubbish is stored in open places in the city and is removed at the same time. Rats dying of plague are a familiar sight. Very few women get the plague — hence the title "City of Widows" applied to Mengtsz. Possibly the comparative immunity of females depends on the careful bandaging of their feet, which in this way are protected from injury and the bites of insects. Many of the women have had several husbands, a most unusual thing in China.

Correspondence.

THE OLD ORDER CHANGES.

BOSTON, March 10, 1900.

MR. EDITOR: — At the meeting of the Boston Society for Medical Improvement the other night, as one listened to the discussion of methods of teaching medicine, to the able papers of Dr. Councilman and Dr. Burrell, and to the remarks of President Eliot and Messrs. Ames, Cannon and others, it was interesting to reflect how the old order changes, and how soon the new becomes the old.

For years those of us who teach have been striving to devise new methods of imparting knowledge. Here comes a young gentleman from the Medical School, who tells us that we must revert to the method of our grandfathers; that knowledge cannot be imparted to such advantage as it can be acquired by the individual through his own efforts, judiciously guided and aided; and the young gentleman is right.

In the earlier years of this century students attended on the practice of active physicians and studied their cases, and that method, modified to suit our present needs, is again the favorite one.

Of course, all that is good and true, as President Eliot so well said. As a section teacher myself, I have long appreciated the value of case study and individual instruction, and I feel that we are developing such lines of work to the great advantage of the student. But is it indeed true that the old-fashioned lecture was the futile thing Dr. Councilman and President Eliot tell us it was?

Between twelve and fifteen years ago I was a student in the Harvard Medical School. Many of my old teachers are still teaching there; many of them attended the meeting of which I write. Who am I, that I should rise up and tell them that their labors were a vain thing? That their strivings to impart knowledge were misdirected strivings, and that their words were as naught? Indeed, I am moved to say to those laborious men something very different, and, though we may have resurrected and perfected another thing, that thousands of us, taught largely on the old didactic plan, still look back on our pains as not altogether unfruitful.

To name names may seem invidious, but when I recall some of those charming, forceful, teeming lectures, I am inspired again. In both Harvard College and the Medical School were teachers whose class-rooms were crowded, whose discourses were eagerly anticipated. Who can regret the words of Mr. Norton and Mr. Shaler in Cambridge? Who failed gladly to attend the lectures of Dr. Bigelow, Dr. Cheever, Dr. Bowditch, Dr. W. L. Richardson, Dr. Francis Minot, and many others in Boston?

To such days, to such teaching and to such men we owe a debt, Mr. Editor, which we can never repay, and as we enter upon a field of new and perhaps more fruitful endeavor, let us not neglect to look backward for a moment, and gladly to render honor where honor is due.

Very truly yours,

J. G. MUMFORD, M.D.

THE DISCOVERY OF THE INFLUENZA BACILLUS.

BOSTON, March 10, 1900.

MR. EDITOR: — A correspondent in your issue of March 8th implies, but is cautious enough not to directly state, that the reviewer of a book on bacteriology in a recent number of the JOURNAL has made a mistake in pointing out that in this book, "Canon is erroneously credited with a part in the discovery of the bacillus of influenza." Your correspondent gives no basis for his idea, except that "In Berlin, in 1892, Canon was the flushed and happy recipient of congratulations for a discovery simultaneous with that of Pfeiffer." What are the facts? Canon did

announce simultaneously with Pfeiffer the discovery of the influenza bacillus. This organism Canon claimed to have found by careful searching of cover-glass preparations of drops of blood taken from the finger tip in a certain proportion of cases of influenza. He did not prove that all the bacteria seen by him were of the same kind, nor did he prove that any of these bacteria were identical with the bacillus discovered by Pfeiffer in the sputum, bronchi and lungs, in cases of influenza. Canon's work thus consists essentially in observations of bacteria in cover-glass preparations of the blood from the peripheral circulation. Such observations, however, are always open to the objections that the bacteria seen come from the staining solutions used, or from the skin, and unless they are confirmed by cultures and by reliable observers, they are never regarded by bacteriologists as of much value. An examination of Canon's paper upon this subject in *Virchow's Archiv*, Bd. cxxxi, Heft 3, 1893, fails to reveal any reason why his observations should not be open to the objections above mentioned. Moreover, neither Pfeiffer nor any other worker has since succeeded in finding the bacilli in the peripheral circulation. Therefore, it is altogether improbable that Canon had any of Pfeiffer's bacilli before him in his preparations, and he should not be mentioned as one of the discoverers of the bacillus of influenza.

Very truly yours,

J. H. WRIGHT, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MARCH 3, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Typhoid fever.	Diphtheria and croup.	Measles.
New York	3,654,584	1801	604	18.80	26.15	.15	3.35	1.65
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	596	188	21 08	16.32	1.53	5.78	1.53
St. Louis	622,000	—	—	—	—	—	—	—
Boston	539,416	273	75	17.39	22.29	1.11	3.69	.74
Baltimore	506,389	—	—	—	—	—	—	—
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	129	34	13.86	19.25	10.78	1.54	2.08
Washington	277,000	94	18	19.08	13.78	2 12	1.06	1.06
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	—	—	—	—	—	—	—
Nashville	87,754	53	17	20.79	26.46	—	—	1.89
Charleston	63,165	37	17	8.16	27.29	—	—	—
Worcester	111,732	32	12	6.26	15.65	—	—	—
Fall River	103,142	—	—	—	—	—	—	—
Cambridge	92,520	35	10	25.74	14.30	—	—	—
Lowell	90,114	—	—	—	—	—	—	—
New Bedford	70,511	—	—	—	—	—	—	—
Lynn	68,218	20	7	10.00	5.00	—	5.00	—
Somerville	64,394	—	—	—	—	—	—	—
Lawrence	59,072	17	10	5.88	—	—	—	—
Springfield	58,266	18	8	22.22	22 22	—	5.55	—
Holyoke	44,510	24	5	25.00	12.50	—	6.25	—
Brockton	38,750	—	—	—	—	—	—	—
Salem	37,723	16	6	—	12.50	—	—	—
Malden	36,421	12	2	50.00	—	—	—	—
Chelsea	34,235	12	2	16.66	—	—	—	—
Haverhill	32,651	—	—	—	—	—	—	—
Gloucester	31,428	—	—	—	—	—	—	—
Fitchburg	30,523	4	1	—	—	—	—	—
Newton	30,461	—	—	—	—	—	—	—
Taunton	28,527	5	1	—	20.00	—	—	—
Everett	28,102	—	—	—	—	—	—	—
Quincy	24,578	6	1	—	—	—	—	—
Pittsfield	23,421	—	—	—	—	—	—	—
Waltham	22,791	—	—	—	—	—	—	—
North Adams	21,583	—	—	—	—	—	—	—
Chicopee	18,316	7	5	—	—	—	—	—
Medford	17,190	4	1	25.00	—	—	—	—
Newburyport	15,636	5	—	—	—	—	—	—
Melrose	14,721	3	1	33.33	—	—	—	—

Deaths reported 3,222; under five years of age 1,026; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 610, acute lung diseases 785, consumption 315, diphtheria and croup 118, measles 52, whooping-cough 33, typhoid fever 32, scarlet fever 28, diarrheal diseases 19, erysipelas 15, cerebrospinal meningitis 8.

From whooping-cough New York 27, Philadelphia, Boston and Cambridge 2 each. From scarlet fever New York 23, Philadelphia 3, Boston 1. From diarrheal diseases New York 13, Pittsburg 2, Philadelphia, Washington and Lawrence 1 each. From erysipelas New York 12, Boston 3. From cerebrospinal meningitis New York 7, Worcester 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,236, for the week ending February 24th, the death-rate was 24.2. Deaths reported 5,387: acute diseases of the respiratory organs (London) 485, whooping-cough 120, measles 115, diphtheria 92, fever 47, diarrhœa 40, scarlet fever 30.

The death-rates ranged from 9.9 in Croydon to 44.7 in Preston: Birmingham 22.7, Bradford 21.5, Cardiff 13.7, Gateshead 23.4, Huddersfield 21.5, Hull 22.3, Leeds 29.5, Liverpool 33.8, London 21.5, Manchester 34.7, Newcastle-on-Tyne 25.1, Nottingham 21.3, Plymouth 27.1, Salford 39.0, Sheffield 27.6, Sunderland 22.3.

METEOROLOGICAL RECORD

For the week ending February 24th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		We'th'r. *		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S...18	29.46	20	24	16	93	53	73	N.W.	N.W.	24	15	N.	C.	.39
M..19	29.76	21	30	12	64	54	59	W.	N.W.	16	15	C.	C.	
T...20	30.23	28	39	18	69	51	60	W.	N.W.	11	6	C.	C.	
W..21	30.33	35	45	25	77	50	63	W.	S.	3	5	C.	O.	
T...22	29 57	40	44	35	94	98	96	E.	N.E.	30	7	R.	R.	1.47
F...24	29.35	36	42	31	100	72	86	N E.	W.	7	15	O.	O.	.33
S...24	29.62	43	52	34	72	78	76	S.W.	S.E.	7	9	C.	O.	
☞														

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☞ Mean for week.

METEOROLOGICAL RECORD

For the week ending March 3d, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		We'th'r. *		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A.M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S...25	29.07	34	56	12	86	46	66	W.	W.	15	24	R.	F.	1.61
M..26	29 86	13	21	5	45	39	42	W.	W.	30	23	C.	C.	
T...27	30.59	6	16	4	62	27	44	N.W.	N.W.	18	14	C.	C.	
W..28	30.62	19	30	8	54	65	60	E.	S.E.	4	7	C.	O.	
T...1	29.75	42	54	30	96	100	98	E.	S.E.	4	16	R.	R.	1.56
F...2	29.42	40	51	28	80	49	64	S.W.	W.	22	30	O.	C.	.62
S...3	29.94	30	33	26	51	56	54	W.	N.W.	15	16	C.	C.	
☞														3.19

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S. smoky; R., rain; T., threatening; N., snow. † Ind cates trace of rainfall. ☞ Mean for week.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MARCH 10, 1900.

J. C. WISE, medical director, commissioned medical director from February 7, 1900.

E. Z. DERR, medical inspector, commissioned medical inspector from February 7, 1900.

R. P. CHANDALL, surgeon, commissioned surgeon from September 24, 1899.

J. T. KENNEDY, assistant surgeon, appointed assistant surgeon.

G. E. H. HARMON, medical inspector, detached from the "Baltimore" and ordered to the "Oregon."

F. B. STEPHENSON, surgeon, detached from the "Oregon" and ordered to the "Baltimore."

W. B. GROVE, assistant surgeon, detached from the "Brooklyn" and ordered to the "Baltimore."

H. H. HAAS, assistant surgeon, detached from the "Baltimore" and ordered to such other duty as the commander-in-chief of the Asiatic station may assign.

J. C ROSENBLEUTH, passed assistant surgeon, detached from the Naval Recruiting Rendezvous, New Orleans, La., and ordered home and to wait orders.

F. E. MCCULLOGH, assistant surgeon, detached from the "Nero" when put out of commission, and ordered to temporary duty on the "Independence."

I. N. HURD, pharmacist, ordered to additional duty on the "Massasoit," Key West, Fla.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING MARCH 8, 1900.

MEAD, F. W., surgeon. Upon expiration of leave of absence to proceed to New York, N. Y., and assume charge of the Purveying Depot during absence of Surgeon C. E. BANKS. March 3, 1900.

BANKS, C. E., surgeon. Granted leave of absence for seven days from March 6th. March 3, 1900.

KALLOCH, P. C., surgeon. To proceed to Mobile, Ala., for special temporary duty. March 7, 1900.

GLENNAN, A. H., surgeon. To proceed to San Francisco, Cal., for special temporary duty. March 8, 1900.

PERRY, T. B., passed assistant surgeon. To proceed to Atlanta and report to the Governor of Georgia for temporary duty. March 8, 1900.

GUITERAS, G. M., passed assistant surgeon. Relieved from duty at Matanzas and detailed as quarantine officer at the port of Cienfuegos, Cuba. March 5, 1900.

BROWN, B. W., passed assistant surgeon. Upon being relieved from duty at the Cape Fear Quarantine Station, to proceed to Cape Charles Quarantine and assume command of the Service. March 8, 1900.

CUMMING, H. S., passed assistant surgeon. To report at Washington, D. C., for special temporary duty. March 3, 1900.

VON EZDORF, R. H., assistant surgeon. Relieved from duty at Atlanta, Ga., and directed to rejoin station at New Orleans, La. March 8, 1900.

MCCLINTIC, T. B., assistant surgeon. Relieved from duty at Cape Charles Quarantine Station and directed to proceed to Cape Fear Quarantine, Southport, N. C., and assume command of the Service. March 8, 1900.

TROTTER, F. E., assistant surgeon. Relieved from duty at Havana and detailed as quarantine officer at the port of Matanzas, Cuba. March 5, 1900.

SCHERESCHEWSKY, J W., assistant surgeon. Relieved from duty at the Immigration Depot, New York, N. Y., and directed to proceed to Havana, Cuba, and report to Surgeon H. R. CARTER for duty. March 2, 1900.

LORD, C. E. D., assistant surgeon. Relieved from duty at the port of New York, N. Y. (Stapleton), and directed to report to Surgeon L. L. WILLIAMS, Immigration Depot, New York, for duty. March 2, 1900.

WILSON, R. L., assistant surgeon. Granted leave of absence for twenty-one days from June 14th. March 7, 1900.

BAILEY, C. W., acting assistant surgeon. Granted leave of absence for seven days. March 3, 1900.

BALLARD, J. C., acting assistant surgeon. Granted leave of absence for four days from April 17th. March 3, 1900.

SOCIETY NOTICES.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. — A regular meeting of the Society will be held at the Medical Library, 19 Boylston Place, on Monday evening, March 19th, at 8 o'clock.

Dr. E. A. Codman will present "A Study of Cases of Colles's Fracture at the Massachusetts General Hospital since the Introduction of the X-ray." This paper will be illustrated by the lantern. The following gentlemen are prepared to take part in the discussion of the cases: Drs. F. H. Williams, Scudder, Conant, Cotton, Lund.

ARTHUR K. STONE, M.D., *Secretary*, 657 Boylston Street.

SUFFOLK DISTRICT MEDICAL SOCIETY. — The Section for Clinical Medicine, Pathology and Hygiene will hold its meeting at 19 Boylston Place, Wednesday, March 21, 1900, at 8 P. M.

At 8 o'clock: Dr. J. N. Coolidge will report "Two Cases of Diabetes Mellitus."

At 8.15 o'clock: Dr. E. G. Cutler will read a short paper entitled "A Form of Digitalis Free from Fat."

J. BERGEN OGDEN, M.D., *Secretary*,
Harvard Medical School, Boston.

MUTTER LECTURESHIP OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

The next course of ten lectures instituted by the late Prof. Thomas Dent Mütter, M.D., LL.D., on some "Point or Points in Surgical Pathology," will be delivered in the winter of 1902–1903 before the College of Physicians of Philadelphia.

The compensation is $600. The appointment is open to the profession at large. Applications, stating in full subjects of proposed lectures, must be made before October 1, 1900, to the Committee on the Mütter Museum.

JOHN H. BRINTON, M.D., *Chairman*,
Northeast Corner of Thirteenth and Locust Streets,
Philadelphia, Pa.

RECENT DEATHS.

HARRIET P. BILL, M.D., of New York City, died on Wednesday March 7th, in New Hampshire. Dr. Bill has been resident physician of the Sherborn Reformatory and of the Child Hospital on Staten Island. She was also, later, matron of the New York Nursery and Child Hospital. She was a woman of unusual mental attainments.

OLIVER PAYSON HUBBARD, professor emeritus of chemistry and pharmacy at Dartmouth College, died at his residence in New York City on March 9th, in his ninety-first year.

CHRISTOPHER PRINCE, M.D., formerly a prominent New York practitioner, died at his home at Irvington-on-the-Hudson, on March 5th, of pneumonia, at the age of seventy-six. He was born in Brooklyn, N. Y., in 1823. He studied medicine under the late Dr. Willard Parker, and was graduated from the College of Physicians and Surgeons, New York, in 1845. He practised for a number of years at Fort Hamilton, L. I., and afterwards removed to New York. He was appointed a police surgeon in 1872, and subsequently resigned this position to accept the surgeonship of the Fire Department. One of his daughters is the wife of Dr. George B. Fowler, recently a Commissioner of the Board of Health.

AARON E PECK, M.D., of Brooklyn, N. Y., died suddenly of pneumonia, resulting from influenza, on March 8th, in his sixty-sixth year. He was graduated from the College of Physicians and Surgeons, New York, in 1855.

CLARENCE EDWIN BEEBE, M.D., of New York, died on March 1st. He was born in Brooklyn, January 4, 1839. He was graduated from Yale University in 1871, and from the Medical Department of the University of the City of New York in 1873. For several years he was a surgeon in the Veteran Corps of the Seventh Regiment, New York National Guard.

FRANK WALKER GRAVES, M.D., M.M.S.S., died in Woburn, March 13, 1900, aged fifty-eight years. He was born in Concord, N. H., and received his medical degree from the University of Vermont. He served the community in various ways, as trustee for the Burbeen Free Lecture Fund, member of the Woburn School Board, and President of the Middlesex County Medical Society. When the Ancient and Honorable Artillery Company visited London three years ago Dr. Graves went as surgeon. He leaves a widow.

BOOKS AND PAMPHLETS RECEIVED.

Progress in Pharmacy and Therapeutics. Reprint. 1899.

Alcoholic Gastritis. By J. A. Hofheimer, M.D., New York. Reprint.

A Review of Swedish Gymnastics. By Theodore Hough. Boston: George H. Ellis. 1899.

Twenty-second Annual Report of the Board of Health of the City of Lowell for the year 1899.

La Pratique des Accouchements Obstétrique journalière. Par Henri Varnier. Paris: G. Steinheil.

Sterility and Pelvic Deformity. By Joseph Brown Cooke, M.D., New York City. Reprint. 1900.

Transactions of the Luzerne County Medical Society for the Year Ending December 31, 1899. Volume VII.

On Diabetes Mellitus and Glycosuria. By Emil Kleen, Ph.D., M.D. Philadelphia: P. Blakiston's Son & Co. 1900.

The Treatment of Nephrolithiasis with Glycerine. By A. Hermann, M.D., Carlsbad, Bohemia. Reprint. 1900.

Publicazioni del R. Instituto di Studi Superiori Practici e di Perfezionamento in Firenze.

Sulla Struttura dell' Ovidutto del Geotriton Fuscus, Ricerche Istologiche. Del Dott. Umberto Rossi. Tip di G. Carnesecchi e Figli. 1895.

Cheloniani Fossili di Montebamboli e Casteani. Memoria Paleontologica del Prof. Giuseppe Ristori. Tip di G. Carnesecchi e Figli. 1895.

Rendiconto Sommario dell' Istituto Ostetrico-Ginecologico (Maternità). Di Firenze per cura del Dott. Giovanni Inverardi. Stabilimento Tipografico Fiorentino. 1892.

Original Articles.

THE OPEN OR OPERATIVE TREATMENT OF FRESH FRACTURES; IS IT EVER JUSTIFIABLE?[1]

With an Analysis of the Results of the Present Methods of Treatment in One Hundred and Fifty-Three Fractures of the Lower Extremity.

BY CHARLES L. SCUDDER, M.D., BOSTON,

Surgeon to the Massachusetts General Hospital, Out-Patient Department; Assistant in Clinical and Operative Surgery, Harvard University.

In responding to the invitation of the chairman of the Surgical Section to introduce the discussion upon the open treatment of fractures, it occurred to me that no better introduction could be made than the presentation of the actual results which have followed the generally accepted methods of treating fractures of the lower extremity.

In order to intelligently discuss the wisdom of operative interference in closed fractures, it is necessary to have a clear notion of the results of the present method of treating fractures. No surgeon, excepting a hospital surgeon of long experience, can have a great knowledge of these end results, and ordinarily few men are sufficiently interested, even though the opportunity be present, to record and study these results in cases coming under their personal observation.

With the permission of the visiting surgeons of the Massachusetts General Hospital, I have obtained the results in fractures of the bones of the lower extremity, after varying periods of time have elapsed. I will briefly state the conclusions of this investigation. It must be constantly borne in mind that statistical tables of the kind here presented are of value just in proportion as one studies the individual units composing them.

FRACTURES OF THE HIP OR NECK OF THE FEMUR.

The treatment followed: If unimpacted, care was exercised that the impaction was undisturbed, and if impacted, a light weight traction was applied to the thigh. The leg, thigh and body were steadied in the recumbent position by a long outside splint. The patient was kept in bed, and after a few weeks was allowed up and about, walking by the aid of crutches.

There are 16 cases in this series of fractures of the hip. Seven were between forty-two and forty-seven years of age; the remaining nine cases (with two exceptions, adults, whose ages were not known) were over fifty years of age; three of these were sixty years or over. This, then, is an adult series. The age given is that at the time of the receipt of the injury. Most of these cases were primarily or secondarily unimpacted.

The results are known in all of these hip fractures from two and one-half to twenty-four and one-half years after the receipt of the accident. In three cases, which were thirty-nine, thirty-eight and twenty-six years old, respectively, the result as to usefulness is said to be perfect, with the exception that there is slight grating in the hip at times, aching in the hip in stormy weather, and shortening of an inch or more, causing a perceptible limp in the gait. Thirteen of the 16 cases have more or less impairment of the functions of the limb. Movements at the hip-joint are limited. There is a weakness of the limb, necessitating the use of a crutch in many instances. Eversion of the foot is observed. There is pain in the hip, which extends down the thigh, even to the sole of the foot. There is a very decided limp in many cases. There is pain in the hip at night when resting in bed; pain upon going up and down stairs, and in stooping and in stepping forward. There is undoubted rheumatism in many cases. Atrophy of the muscles of the thigh, buttock and calf of the injured side is noted. In practically all these 16 cases, followed carefully many years after the original injury, there is impairment of the hip, anatomically and functionally.

FRACTURES OF THE THIGH.

The treatment followed: Etherization. Adhesive-plaster extension; ham-splint, coaptation splint, long T outside splint; body swathe. Later, plaster-of-Paris spica from ankle to axilla; crutches.

There are 35 cases in this series. Thirteen of these cases reported for examination. Fourteen cases occurred in childhood, averaging seven and one-half years old. These childhood cases were examined from one and one-half to seven years after the accident. All have perfect functional results. Four cases complain of slight pain in the thigh occasionally; three of the four have a little stiffness of the knee, one and one-half, three and three and one-half years respectively after the accident. Sixteen cases occurred in adults from eighteen to forty-eight years of age. This group was seen from one to six years after the injury. Five have unqualifiedly perfect results, without pain and stiffness. The remaining 11 cases have limited motion at the knee-joint, aching in the thigh, pain after exercising, pain in wet weather, a weakness of the whole leg and a slight limp. Five cases occurred in old age, averaging fifty-eight years. This group was seen from two to six years subsequent to the injury. None have perfect results. There is one case of fibrous union with shortening; two must use a cane in walking. The knees are painful, and motion of the knee-joint is painful and limited. Swelling of the whole leg is not uncommonly seen, and pain in wet weather is of course an ordinary occurrence.

FRACTURES OF THE PATELLA.

The treatment followed: There are 51 cases in this series. Five were compound. Fifteen were operated by wiring the bone, suturing the capsule, by using Malgaigne's hooks, and by steel pins. Thirty-six were treated by the expectant method, that is, by elevation of the whole limb, immobilization of the knee-joint, straps about the fragments, local compression, and more or less prolonged immobilization.

These cases were examined from one and one-half to ten and one-half years after the accident. Of the 15 operated cases, seven (46 per cent.) are about as good as the well leg. Eight are not as good as the uninjured leg. Of the 36 cases treated expectantly, 16 (44 per cent.) were about as good as the well leg, and 20 were not as good as the well leg. All cases had some limitation of motion at the knee-joint. In some the knee cracks while walking, feels stiff, aches and

[1] Read at a meeting of the Surgical Section of the Suffolk District Medical Society, December 6, 1899.

burns; is weak; is troublesome while going up and down stairs; gives way unexpectedly, causing a fall. In some there is pain after unusual exertion and in damp weather, stepping up is difficult, kneeling is painful, stepping upon irregular surfaces is painful. In others running and jumping are impossible.

FRACTURES OF THE LEG.

The treatment followed: Invariably the leg, thigh and foot were placed upon a posterior wire splint and immobilized by side splint and straps. Later the leg was placed in a plaster-of-Paris splint extending above the knee, the patient moving about by the aid of crutches. These cases were seen from one year and five months to ten years after the accident happened. The average period was between four and five years. There were 35 cases of fracture of the leg. Under twenty years of age there were seven cases; between twenty and fifty years of age, 21 cases; fifty years of age and over, seven cases; this series is largely, therefore, of adults of middle age.

Of those twenty years of age and under, six were closed fractures and one was an open fracture. Five cases had as good a leg as before the injury; these were all closed fractures. Two cases had poorer legs than before the injury; one of these cases was open and one was closed. Of those twenty-one years to fifty years of age, 11 were closed fractures and 10 were open fractures. Eight cases had as good a leg as before the injury. Of these eight, five were closed and three were open fractures. Thirteen had poorer legs than before the injury. Of these 13, six were closed and seven were open fractures. Of those fifty years and over, four were closed and three were open fractures. All these cases had poorer legs than before the injury. Of the 35 cases of fracture of the leg, 21 were closed and 14 were open fractures. Of the 21 cases of closed fractures only eight (40 per cent.) were perfect results. Of the 14 cases of open fracture, only three (21 per cent.) were perfect results.

These cases invariably complain of flat-foot; pain in the fracture when the weather is damp; cramps at night in the calf of the leg; pain after long standing; a weakness of the leg; a swelling of the leg; pains through the leg after using it much; a stiffness of the ankle-joint; limitation of motion of the knee-joint; that stepping upon an uneven surface is troublesome; that the foot turns in; that there is a limp; of rheumatism.

Considering these groups of fractures of the lower extremity the results are unsatisfactory.

In the fracture of the hip[2] in old age the physical changes in the bone will always modify the reparative processes to some extent. Age symptoms will always appear. Eighty-one per cent. of the results are poor. Much can be attempted for these unfortunate people by more careful fixations and the operative treatment of pegging or clamping. In young adults with impaction and deformity the impaction should be broken up and the fracture set accurately.

In fracture of the thigh the apparent effect of age is seen in the end results obtained during the different periods of life. In childhood all fractures resulted in perfect functional results, 100 per cent. In adult life 31 per cent. were perfect, 69 per cent. imperfect. In old age none were perfect, 100 per cent. imperfect. These imperfect results of 69 per cent. and 100 per cent. can certainly be reduced.

In fracture of the patella statistics are misleading, for treatment of this fracture has so radically changed that cases are no longer to be fairly compared unless the method of treatment is known in all cases. To-day there are four methods of treating fracture of the patella:

(1) The old expectant method, by straps, immobilization, rest, no motion permitted at the knee for six months or more, unprotected.

(2) The new expectant method, which is the same as the old, with the addition of early continuous massage and early use of the limb.

(3) The old operation, by wiring with silver wire and long immobilization.

(4) The new operation, by repairing the bony damage and the damage to all the soft parts as well with early use and massage; very properly called the completed operation. The second and fourth methods of treatment are the most satisfactory. The results of these methods will be comparable.

In the series of cases of patellæ here reported 46 per cent. operated upon made a good recovery; 44 per cent. not operated upon made also a good recovery. Even in these cases which are said to have made a good recovery all exhibited limitation of motion at the knee-joint, in the extreme of flexion.

In the closed fracture of the leg 60 per cent. showed a poor result. In the open fracture of the leg 79 per cent. showed a poor result.

Very great care has been exercised in the preparation of the tables, which relate the details of each case in the several groups of fractures. A perusal of these cases thus tabulated will prove instructive.

Changes in the accepted methods of dealing with fractures of bone have been very gradual. Very little zeal has been exercised in dealing with simple fractures. Such fractures have been almost disregarded by surgeons in our large hospitals, the treatment of uncomplicated cases in hospital practice passing into the hands of the house surgeons, who ordinarily know little as to the detailed care of such so-called simple cases. Until recently, little clinical instruction has been given in the medical schools of this country upon the practical treatment of fractures.

The classical division of fractures into those in which there is a wound from the surface to the broken bone and those in which there is no such wound is still recognized as a fundamental division. The former group of compound fractures was invariably associated with various alarming conditions — namely, with primary or secondary hemorrhages, with suppuration, with sloughing of soft tissues, with necrosis of bone, with various forms of blood poisoning known to us under the names of sapremia, septicemia, pyemia, with hospital gangrene, with erysipelas, with greatly delayed union, and not very infrequently with amputation and death. The mortality from this group of fractures in the ordinary course of treatment in hospital practice was as high before the antiseptic period as 68 per cent., nearly 70 per cent. Is it any wonder that the fracture without an open wound of the soft parts resulting ordinarily in freedom from all infections and complications, resulting in safety to life, and in a more or less perfect recovery — is it any wonder that such a fracture should have been styled a simple fracture? Is it any wonder that the simple fract-

[2] These cases have been carefully treated. The present methods of treatment are faulty and can be improved.

ure was regarded as a *noli me tangere*, lest the simple should be converted into a dreaded compound fracture? This influence of pre-antiseptic days has been felt strongly up to the present time. The fear of suits for malpractice has likewise had its influence in hindering advance in the treatment of fractures and in encouraging surgeons to follow the old let-alone treatment.

The treatment of closed fractures has always been thought to be easy and simple. The tables are to-day being reversed; it is the simple fracture which to-day is found to be the most difficult to treat, if the problem of treatment is fairly faced. Is there anything more difficult to treat satisfactorily than the simple oblique fracture of both bones of the leg above the ankle; than fracture of the surgical neck of the humerus with or without displacement of the head of the bone; than fracture of the clavicle with considerable displacement? Is the separation of the upper epiphysis of the humerus an easy lesion to treat satisfactorily? Instances may be multiplied until it is evident that each bone is frequently fractured in a way most difficult for easy and satisfactory treatment by existing methods.

The Röntgen ray provides through the developed plate and fluoroscope accurate anatomical knowledge of the relative position of broken bones. The interpretation of the fracture seen through the fluoroscope and upon the plate must be made by one skilled in the art. The casual observer makes many errors in judgment and misinterprets the conditions present. The exact conditions of exposure and position under which the skiagraph is taken must be known before even the trained interpreter can correctly make the diagnosis. The x-ray provides the means for an accurate diagnosis.

Championnière, the one who has urged most strongly the use of massage in the treatment of fractures, finds that by it pain disappears, tension disappears with the absorption of ecchymosis, a sedative nervous effect is obtained, the callus forms more rapidly and consolidates earlier, function is restored to the part early, and that there is less atrophy of muscles, less stiffness of joints and tendons, less edema and a better local circulation. These assertions have been demonstrated to be true by men in this country, and the proper use of massage as a means to an end in the treatment of certain fractures is now thought to be desirable. It is to fractures near joints rather than to those in the diaphysis of the bone that massage is particularly applicable, and it is so used by the German surgeons. Massage properly applied will improve the ultimate results of fractures near to joints, under both the closed and open treatment. Massage has hitherto been used too little in the hospital treatment of fractures. It should be used systematically and its great benefits studied.

From analogy, considering the results of excisions of the knee-joint, an operation having to do with the larger bones of the leg by some method of internal and external fixation, we should expect good results in operations for fracture of the same bones. Excision of the knee is undertaken without fear of infection and with a strong probability of union taking place between the two bones. I find that of 13 excisions of the knee for tuberculosis the results, after from one to six years, showed solid union of the bones, with the exception of one case in which there was, after four years, very slight motion.

The mortality following compound fractures of the extremities has fallen from 68 per cent. a few years preceding the introduction of antiseptics, to two or three per cent. at the present time. Dennis has published a list of 1,000 consecutive cases of compound fractures treated in four metropolitan hospitals, with a mortality of one-seventh of one per cent. Practically, therefore, sepsis has been done away with in the treatment of compound fractures. In operations, therefore, upon closed fractures the element of sepsis may be left out of account in reckoning the risk of interference. I have found in six recently reported cases in which closed fractures have been treated by open incision no sepsis.

From analogy, osteotomy being a simple, safe and satisfactory surgical procedure, the operative treatment of closed fractures should be a safe procedure so far as the likelihood of infection is concerned. The only element not common to the two conditions is that of laceration of the soft parts in the case of fracture. The experience of those operating aseptically upon closed fractures demonstrates that this difference in the two conditions need not be regarded.

Very few are familiar with the conditions existing at the seat of fracture immediately after its occurrence. The denuded bone, comminuted fragments possibly, the great mass of blood clot from the torn vessels, the injury to the soft parts, often very extensive, far from the seat of the fracture of the bone, all these conditions if seen in a superficial wound or presented to the surgeon in an open fracture, would immediately receive attention. The fact that these conditions exist in every fracture to a greater or less degree should lead to their treatment in a rational way, by open incision.

The wound of the hard parts should be treated upon the same principles as the wound of the soft parts. There is as great safety to-day in an open as in a closed wound. There is greater safety in an open than in a closed fracture. Closed fractures of the vault of the skull are very generally operated on by surgeons to-day in the presence of cerebral symptoms, no matter how trivial.

Weir,[3] in a case of closed fracture of the malar bone, incised the mucous membrane above the canine tooth, opened the antrum, inserted a steel sound and lifted the depressed bone into place, packed the antrum with iodoform gauze, and the patient recovered without deformity.

Spencer[4] reports that Hearn has incised and sutured two fractures of the clavicle. In one case the subclavius muscle was caught between the fragments of the fracture, in the other case a triangular piece of bone was broken off and lay displaced between the fragments. The result in each instance was a perfectly shaped clavicle and a scarcely perceptible scar. At the Congress of French surgeons, Heydenreich did not favor operation upon the clavicle, unless a nerve or vessel were in danger. He objects to any scar and to the resulting swelling, which certainly did not appear in Hearn's cases.

McBurney,[5] Porter and others, have used the open method in fracture of the surgical neck of the humerus, with and without dislocation of the upper fragment.

Barker[6] has treated recent closed fractures of the

[3] New York Medical Record, March 6, 1894.
[4] G. W. Spencer: American Journal Medical Sciences, April, 1898; La Semaine Méd., October 26, 1898.
[5] Annals of Surgery, May, 1896.
[6] Barker, O. E.: Lancet, August 20, 1898.

olecranon process of the ulna by incision and suture, with good results in all the cases.

Watson Cheyne [7] reports a partial fracture of the head of the radius in a girl twenty-six years of age. He removed the portion of the radial head fractured, with a perfect functional result. The portion of the head remaining intact prevented possible lateral motion at the elbow.

Wainwright [8] reports a fracture of the coronoid process of the ulna, together with a fracture of the radial head. He removed the head of the radius and a part of the coronoid of the ulna. This operation was followed by good functional results.

Watson Cheyne reports a fracture of great interest in a boy of thirteen, namely, a fracture of the olecranon and coronoid processes of the ulna, together with a fracture of the external condyle of the humerus. He wired the olecranon and removed the fragments of the coronoid and external condyle. Later it was necessary to remove the silver wire from the olecranon, because it pricked the skin and was an annoyance when the child moved his arm. The boy recovered with a useful arm.

Bruns and Poland, as early as 1884, recommended operation in recent epiphyseal separations, in cases in which the fragments are so locked together that they cannot be restored to their proper position, and when a fracture of the epiphysis extending into the neighboring joint is likely to interfere permanently with its normal function, and when a dislocation accompanies the separation which is impossible of reduction, and when the dislocation presses upon important structures, as often happens in separation of the lower femoral epiphysis.

Fractures of the femoral neck have been pegged by Cheyne and Senn [9] with successful results. Cheyne's case was instructive in that a woman with infantile paralysis in one leg fractured the other femoral neck. Cheyne pegged the fracture with an ivory peg and she made a splendid recovery.

Allis [10] has many times operated upon fracture of the femur, when in the upper one-third of the shaft, with good result. It should be generally recognized that many of these fractures cannot be set by traction or position, and that the only method that warrants a satisfactory result is that of the open treatment. Allis uses steel screws. The weakness of the fracture of the femoral shaft is probably due in large measure to the angular deformity and rotation of the upper fragment which result after the ordinary treatment.

Lane [11] advocates the open treatment in recent fractures of the leg in order that oblique fractures of the tibia and fibula near to the ankle may be held satisfactorily. Lane is especially interested in the relative position of the two fragments in a leg fracture. He maintains that the old-time and generally accepted method of placing the foot at a right angle, with the inner side of the great toe in a line from the anterior spine and mid-point of patella, results in permanent deformity of the leg.

Fractures of the patella have for some time been subjected to two distinct forms of treatment, either the expectant treatment or the open treatment by some form of suture. Good functional results are obtained by the expectant treatment, at the expense of time to the patient. Ultimate recovery is longer by this method. By the operative method a quicker result is obtained, and it is in many particulars better than that obtained by the expectant treatment.

The open treatment of the fracture should be undertaken only after careful consideration of the health of the patient, and under the most rigid antiseptic and aseptic conditions possible. The open treatment of the fracture should be carried out only by a skilled and competent surgeon. It should not be done in the aged. It is an operation for young adults, particularly for the laboring man. Early massage and passive and active motion after four weeks are desirable in the treatment of the fracture after operation.

The open method. — The operation should be performed only by skilled surgeons, as soon after the injury as is possible. It is thought by some that if it cannot be performed immediately following the injury that it should be done after about one week. Scrupulous antiseptic preparation of the skin throughout the whole circumference of the limb and for a long distance either side of the seat of the fracture is absolutely essential. This preparation should be that which the surgeon finds efficient preceding other operations. The skin incision should fall, when possible, away from the line of fracture, so that the wound of the soft parts shall not cross the wound of the bone. All bits of detached bone, fragments of muscle and all blood clots should be removed; all hemorrhage checked. When possible, the bones should be reduced without cutting the broken ends. For it is wise to lock the bones together in their natural and original position.

Fixation of the fragments. — Attempts have been made to fix the fragments of a fractured bone in different ways in the treatment of open fractures and in ununited fractures: Forms of suture and wrapping of fragments by silver wire, silk, silkworm gut and chromicized catgut; forms of pegs and screws of ivory and steel; forms of ferrules of bone; dovetailing fragments together; the Parkhill clamp, which inserted into the two fragments is allowed to project beyond the skin covering the broken bone.

It is impossible to determine which method of those in use to-day will prove effective until the fracture is exposed to view. That method in any given case is the best which preserves the alignement of the shafts of the bones.

The general condition of the patient must be carefully studied before deciding upon operation. In extreme age operation may be contraindicated because of insufficient kidneys. Some disease may be present contraindicating operative interference. Operations should not be done indiscriminately without regard to constitutional conditions.

Difficulties which hitherto have been concealed by an intact skin. — The difficulties of reducing fractures will become more and more apparent as the open treatment is more commonly used. It will be found that no one factor is the cause of the difficulty, but more often it is due to a shortening of all the soft parts of the limb about the fracture occasioned by hemorrhage into the tissues; by retraction of tissues, which have been normally stretched, and after the fracture have no resistance offered to their retraction. This difficulty in reduction I have found to be more common than is generally supposed. A recognition

[7] British Medical Journal, March 7, 1891, p. 516.
[8] Transactions Clinical Society of London, vol. xx.
[9] Journal of the American Medical Association, 1899.
[10] Allis: Philadelphia Medical News, November 21, 1891, p. 590.
[11] Transactions of Clinical Society, London, 1894, p. 167.

of it as a cause will lead undoubtedly to the supplementing of splints by internal fixation in the treatment of many fractures.

That method of internal fixation will be the best for the individual case which immobilizes it best. It is unfair to state that one method will be best in every instance. Let each operator use that method which in his experience he finds most efficient. But let each operator hold a high ideal of what he means by an efficient method. For instance, silver wire used as it is ordinarily employed, one strand through each bone, in fracture of the forearm, is inefficient; it cannot be made to hold the fragments perfectly reduced. There is need for greater immobilization than that method can afford. The clamp of Parkhill offers in this instance more satisfactory means. It is wise, whatever form of fixation is used, that it should not be placed finally in position until the part has been immobilized upon a splint of some sort. Otherwise the wire suture, or pin, becomes loosened and ineffective.

In conclusion, the ideal result to be aimed at after a fracture is union of the fracture without deformity and without impairment of the function of the limb, either immediately or remotely. The generally accepted methods of treating fractures do not give satisfactory results in many cases. There is need for a radical departure in the treatment of closed fractures. Anesthesia and the x-ray afford the means of accurate diagnosis. Sepsis is practically abolished. From analogy in excisions and osteotomy, closed fractures of bone may safely be treated by open incision. The cases reported in literature, expressing the opinions of many surgeons, demonstrate that the open method of treatment is satisfactory and a great advance upon generally accepted methods.

Under these circumstances, it is fair to state that closed fractures should be treated by open incision and internal fixation, when other methods fail to secure reduction and immobilization. The open method will then be used more and more in oblique fractures of the diaphyses of long bones; in complicated fractures about joints; in all fractures associated with injury to nerve trunks, with injury to great blood-vessels, and associated with threatening gangrene.

(To be continued.)

INTERMITTENT GASTRIC HYPERSECRETION, WITH A REPORT OF A CASE.

BY ARTHUR W. ELTING, M.D.,
From the Bender Hygienic Laboratory, Albany, N. Y.

Chronic hypersecretion is to-day a well-recognized, and not infrequent, form of gastric disorder. Intermittent hypersecretion is, however, of much less frequent occurrence, and there are but comparatively few cases to be found in the literature. Reichmann,[1] in 1882, first called especial attention to a gastric disorder characterized by intermittent attacks of hypersecretion. Rosenthal[2] has reported cases of intermittent gastric hypersecretion, and has advanced the theory that it is due to an excitation of the vasomotor centres which results in an anemia of the brain, with a stimulation of the vomiting and gastric secretory centres in the medulla. Boas[3] has reported cases of intermittent gastric hypersecretion, and has discussed the condition in some detail. He believes it to be due either to a secretion neurosis or a reflex neurosis resulting from disease of the central nervous system. Boas[4] does not, however, believe that a so-called central form of gastric hypersecretion is to be differentiated. In this view he is supported by Bouveret,[5] to whom we are indebted for careful studies upon this subject.

Leube,[6] Ewald[7] and Riegel[8] have reported cases of intermittent hypersecretion, and they believe the condition to be a functional disturbance of the nerves of the stomach, which may occur alone or as part of other neuroses. Rossbach[9] has described a form of intermittent gastric hypersecretion, in association with which there occurs just before or at the beginning of the attack most severe headache. To this he has given the name of gastroxynsis. This is undoubtedly but another form of intermittent gastric hypersecretion, and one which seems to occur more frequently among the better classes.

There was recently admitted to the Albany Hospital, in the service of Dr. Vander Veer, a case which manifested practically all of the characteristic signs and symptoms of intermittent gastric hypersecretion. Since it was possible to study this case carefully, both during an attack as well as during the interval between attacks, it is considered advisable to report the history and notes in some detail.

W. C., male, age thirty-three, married. Complains of stomach trouble.

Family history. — Negative. No history of any nervous disorder in any members of the family, nor of any disease similar to patient's present illness.

Past history. — Measles when a child; no other exanthemata. Typhoid fever in Calcutta at twenty-three years of age; was sick two or three months in a military hospital; recovered completely. About six months after he recovered from typhoid fever patient had an attack of dysentery, with numerous bloody stools. This lasted for about six weeks, since which time the patient has not had any gastro-intestinal trouble of any importance till the present illness. Patient says he has always been strong and healthy up to the present illness, and has always done hard work. Denies syphilis, and from his history no indications of a syphilitic infection can be obtained. Gonorrhea and cystitis at twenty-three years of age; recovered completely, and has had no subsequent trouble with the genito-urinary organs. His appetite has always been good and his bowels regular until present illness.

Present illness. — Began about two years ago, when patient was convalescent from a broken leg; prior to that time he had never had any stomach trouble. He had always been a hearty eater, but food had never caused any distress. The stomach trouble began with a severe, constant, moderately sharp pain in the region of the stomach. The pain remained fairly well localized in this region. An hour or two after the onset of the pain, the patient says he vomited a considerable quantity of a greenish fluid which did not appear to contain food.

The first attack lasted about four weeks, during which time the patient says he had more or less pain in the stomach, except when relieved by morphine. The pain would usually pass off or become much less severe by evening, but would reappear with great severity in the morning, usually about six o'clock, and would continue very severe until the patient vomited, which would usually occur from one to two hours

after the severe pain began. The patient says that these paroxysms of pain were always followed by vomiting. He says that during the forenoon he would vomit from a pint to two or three quarts of a greenish fluid which never contained any food, unless he should vomit shortly after eating. The vomitus was never blood-tinged, nor did it contain anything that suggested blood. The patient says the pain would always be most severe until he vomited, and that vomiting always afforded a great deal of relief. When vomiting did not occur spontaneously, he was in the habit of inducing it by putting the finger down the throat.

The patient insists that the quantity vomited was out of all proportion to the fluid he had taken, and that usually he would take no food or fluid during the night, and yet he would, in association with the paroxysm of pain, vomit a large quantity in the morning.

The first attack lasted about four weeks, when the pain gradually disappeared, the vomiting ceased and the patient began to feel better. During the attack the patient says that he took but very little nourishment, and he is of the opinion that the taking of food had a tendency to increase the pain somewhat. He says that during the period of this attack there was marked tenderness on pressure over the region of the stomach. During the first attack he lost about twenty pounds in weight. Following this attack the patient says he was free from stomach trouble for about six weeks, during which time he had a good appetite; retained all kinds of food, gained in weight, and went back to work. At the end of this interval of six weeks, patient had another attack resembling in all particulars the first one and lasting about three weeks, and followed by an interval of two weeks in which he was free from stomach symptoms. Since then up to the present time these attacks have recurred at intervals of two or three weeks, and the attacks have usually lasted two or three weeks. In each attack the patient has manifested the same symptoms: severe pain in the stomach coming on in the early morning and followed in a short time by profuse vomiting, usually of a greenish fluid and never any blood, and never any food, except when vomiting occurred shortly after eating.

During the attacks the patient says he loses in weight, but usually regains most of it in the interval between attacks. During these intervals between attacks he says that his appetite is good and he can take any kind of food and never has any gastric disturbance. He does not know of anything that will cause an attack, but thinks it comes on spontaneously. They never follow indiscretions in food or drink, overexertion or mental anxiety. He says he is not of a nervous temperment and is not in the habit of worrying. Patient smokes moderately, but does not chew tobacco. He takes an occasional glass of beer. His bowels are usually constipated during the attacks. Has never had any chills or fever in association with the attacks.

Physical examination.—Well-developed, well-nourished man; skin and mucous membranes of good color; tongue clean, no tophi; pupils of moderate size, equal, react to light and accommodation. Pulse 84 to the minute, regular, and of good quality. Wall of the artery is palpable. Thorax: Well-formed and symmetrical. Expansion good and equal on both sides. Vocal fremitus equal on both sides. Percussion note clear and resonant throughout front and back. On auscultation breath sounds clear and of normal relative intensity. Heart: Point of maximum cardiac impulse in fifth left intercostal space inside mammillary line. Area of dulness not increased. Heart sounds clear and of normal relative intensity at apex and base. Abdomen: Symmetrical, natural looking; costal and iliac grooves equal. No peristaltic waves visible; no visible mass. On palpation, abdomen is everywhere soft, no tenderness on deep pressure; no mass to be felt. Pylorus cannot be palpated. Abdomen is everywhere tympanitic. Liver: Area of dulness is of normal extent; edge not palpable. Spleen not felt. Area of dulness not increased. Kidneys not felt. No glandular enlargement. Reflexes are present, both superficial and deep, and are normal. No clonus; no evidence of skin anesthesia. On inflation of stomach the greater curvature extends to a point about five centimetres above the umbilicus. The stomach does not appear to be enlarged. There are no visible waves of peristalsis and there is no mass to be felt. There is evidently no dilatation of the stomach, and no tenderness on palpation of the stomach.

October 30th. Since admission to the hospital, October 24th, patient has enjoyed excellent health. Has taken food well and has not complained of the least gastric discomfort. His general condition is excellent. At 8 A. M. to-day the patient having had no food or drink since 6 P. M. yesterday, he was given a test breakfast composed of two small slices of stale bread and eight ounces of water. This test breakfast was removed at the end of one hour. Thirty cubic centimetres of an opaque fluid obtained, containing very small particles of partially digested bread. Sour odor; acid to litmus. Free hydrochloric acid by both the Congo-red test and the dimethyl-amido-azobenzol test. No lactic acid by Uffelmann's test. Total free hydrochloric acid, 9; total acidity, 32; rennin present; pepsin present. Microscopical examination negative.

November 1st. Stomach tube passed at 8 A. M. to-day, patient having had nothing to eat since 6 P. M. yesterday. Nothing obtained from the stomach by the tube.

November 2nd. At 12 noon to-day, the patient was given a test dinner composed of soup, beefsteak, potato, bread and water; a liberal allowance of each. At 5 P. M., the stomach tube was passed and 10 cubic centimetres of fluid with a few particles of partially digested food obtained. This test demonstrated that the motor activity of the stomach is normal and that there is no retention of food.

November 9th. Patient has felt very well since last note. Has been around all the time and has taken food well. On one or two occasions since last note the stomach tube has been introduced into the fasting stomach in the morning; nothing has, however, been obtained.

November 10th, 6 P. M. This morning patient began to complain of rather severe pain in the region of the stomach. Had felt perfectly well till 10 o'clock. No nausea or vomiting. At 2.30 P. M. stomach tube was passed and only a few cubic centimetres of mucus were obtained. The pain ceased late in the afternoon and patient was able to take nourishment.

November 11th, 6 P. M. Patient had a very com-

fortable night and day. Up and around all day and took food well. No pain, no nausea and no vomiting.

November 12th, 6 P. M. Patient had a very good night. At about 6 A. M. to-day he began to complain of severe pain in the region of the stomach. The pain grew worse, and at 9.30 A. M. he required morphine. Vomiting began about an hour after the onset of the pain, and between 7 A. M. and 12 noon patient vomited 600 cubic centimetres of greenish fluid. Vomiting seemed to afford some relief. At 12.30 P. M. stomach tube was passed and 225 cubic centimetres of greenish fluid removed from the stomach, affording patient considerable relief. The pain has continued more or less severe until this evening, but there has been no vomiting since the passing of the stomach tube. In the eighteen hours from 6 o'clock last evening till noon to-day, patient took only three ounces of fluid and no nourishment. The vomitus and the stomach contents removed with the stomach tube were examined separately and found to practically agree, except that the total acidity was a little less in the vomitus than in the contents removed with the stomach tube.

Examination of stomach contents. — Slightly greenish fluid; mucous flocculi; no particles of food; sour odor; faintly acid to litmus; no free hydrochloric acid; no lactic acid; total acidity, 13; rennin present; pepsin present. Microscopical examination negative.

November 13th, 6 P. M. Patient had a good night and has been up and around to-day, and has taken food well. No pain, no nausea and no vomiting. At 9 A. M. to-day the stomach tube was passed and only a few cubic centimetres of mucus obtained.

November 14th, 6 P. M. Patient has been very comfortable during the past twenty-four hours. Has taken food well.

November 15th, 6 P. M. Patient had a good night and felt well till about 7 o'clock this morning, when he began to have very severe pain in the region of the stomach. The pain continued until about 2 P. M., since which time he has been comfortable. Vomiting began about one hour after the onset of the pain this morning and during the forenoon patient vomited 420 cubic centimetres of greenish fluid. At 1 P. M. stomach tube passed and 115 cubic centimetres of similar fluid obtained. During the attack there was considerable tenderness on palpation over the region of the stomach, but the stomach outlines did not appear to be increased. The patient looks pale and pinched and is evidently losing in weight rapidly. The vomitus and the stomach contents obtained with the tube were examined separately. Both examinations agreed, except that the total acidity was a little less in the vomitus.

Examination of stomach contents. — Greenish fluid; no particles of food; slightly sour odor; neutral to litmus; no free hydrochloric acid; no lactic acid; total acidity, 11; rennin present; pepsin present. Microscopical examinations negative.

November 16th, 6 P. M. Patient had a good night and has been perfectly comfortable all day. Has taken food fairly well.

November 17th, 6 P. M. Patient had a good night. About 6 A. M. to-day severe pain in the region of the stomach began and continued until about 2 P. M., during which time he required morphine. Vomiting began at 8.30 A. M. and within a few minutes he vomited 650 cubic centimetres of a greenish fluid. Stomach tube passed at 9 A. M. and 70 cubic centimetres of greenish fluid obtained. There has been no vomiting since 9 o'clock, at which time patient's stomach was washed out with silver-nitrate solution, 1 to 1,000, which seemed to afford some relief. From 8 P. M. yesterday until noon to-day patient did not take any food. He looks very pale and distressed, and severe suffering is indicated by the facial expression. Since 2 P. M. patient has been perfectly comfortable. For several days past the patient has been on tonic treatment. The vomitus and the stomach contents obtained with the tube were examined separately. Both examinations practically agreed.

Examination of stomach contents. — Greenish fluid; no particles of food; sour odor; neutral to litmus; no free hydrochloric acid; no lactic acid; total acidity, 12; rennin present, pepsin present. Microscopical examination negative.

November 18th, 6 P. M. Patient has been very comfortable since last note.

November 19th, 6 P. M. Patient had a good night. At 7 o'clock this morning severe pain began in the region of the stomach; this continued till noon.

At 8 A. M. patient began to vomit, and during the forenoon he vomited 910 cubic centimetres of greenish fluid. Vomiting seemed to afford much relief. Lavage of the stomach at noon with 1-to-1,000 silver-nitrate solution. Patient has had a comfortable afternoon.

November 23d. Patient has been very comfortable since the last note. Has taken food well and shows marked improvement. He has, however, evidently lost considerably in weight during the past ten days. His general condition is satisfactory and he has absolutely no gastric symptoms. At his request he was discharged to-day, and advised to take tonic treatment constantly, with lavage of the stomach during the attacks.

January 10, 1900. In a letter of this date, the patient says that he has felt perfectly well since leaving the hospital. He has had absolutely no gastric symptoms, and has gained in weight and has been able to attend to his work. His appetite has been very good and all kinds of food have been well retained.

The nature of the etiological factors concerned in intermittent gastric hypersecretion is not at all well understood. Its occurrence at times in young, nervous, excitable individuals would seem to indicate that some functional disorder of the nervous system is responsible for the condition. Whether this disordered state is confined to the peripheral or central nervous system or involves both cannot be definitely determined. Its association in many instances with neurasthenia and other functional neuroses of a general character would seem to indicate that in certain cases, at any rate, intermittent gastric hypersecretion is but a part of a general neurosis. In some instances, over-indulgence in food, tobacco, or liquor may precipitate an attack, while in other instances psychical excitement may be the immediate cause. In each instance there would appear to be some fundamental disorder of the nervous system, which renders it more susceptible to these influences.

In brief, then, intermittent gastric hypersecretion would appear to be a functional neurosis of obscure origin.

The condition is characterized by intermittent attacks of pain in the region of the stomach associated with nausea and vomiting, and occurring at a time when ingesta are usually no longer present in the stomach. The attacks usually begin suddenly and unexpectedly, most frequently in the early morning, and the first symptom is a more or less severe pain in the region of the stomach. Shortly after the onset of the pain, vomiting usually begins and both the pain and vomiting may continue several hours.

The quantity of fluid vomited within a few hours may vary from a few hundred cubic centimetres to as much as two or three litres. The vomitus, which possesses the characteristics of gastric juice, is of a greenish or yellowish color, and is, as a rule, quite acid, free hydrochloric acid usually being present. The total acidity may vary from 10 to 50, and occasionally, as in the case reported, free hydrochloric acid may be absent. In other instances intermittent gastric hypersecretion appears to be associated with marked hyperacidity.

Food is usually not present in the vomitus, unless the attack should begin shortly after a meal. In rare instances the vomitus may be slightly blood-tinged, and in such cases the possibility of the existence of a gastric ulcer would have to be considered.

The intensity of the pain varies; in some cases it is not especially distressing, while in other cases it is most severe and often requires large doses of morphine, and these are the individuals especially apt to develop a morphine habit. Vomiting usually affords considerable relief from the pain and in many instances when vomiting does not occur spontaneously, the patient will induce it. There is complete loss of appetite and inability to retain food during the attack, and the patient may emaciate rapidly. The duration of the attack varies from a few hours to several days. In some cases the patient will have a paroxysm every day or perhaps every second or third day, for a period of two or three weeks, and this will be followed by an interval lasting perhaps several weeks, during which time there will be absolutely no gastric symptoms. The cessation of an attack may be sudden or it may be more gradual, the symptoms slowly abating and a normal state of health being gradually established. The appetite usually returns immediately after the cessation of the attack. During the interval between attacks the patient usually feels quite well and there may be absolutely no indication of a gastric disorder, food of all kinds being well retained. If, during the interval between attacks, the stomach tube be passed when the stomach is in a fasting condition, it will be found to be empty, thus proving that there is no chronic hypersecretion. Examination of the gastric contents after a test meal given during the interval between attacks usually demonstrates that both the secretory and motor activity of the stomach are normal. Physical examination during an attack usually reveals but little, aside from some tenderness in the region of the stomach.

The diagnosis as a rule offers no difficulty, for the symptom complex is characteristic.

The occurrence occasionally of attacks of intermittent gastric hypersecretion in association with gastric crises in tabes may be a source of confusion. In such cases careful examination will usually reveal other signs of tabes and preclude the possibility of an error in diagnosis.

Treatment. — The treatment of intermittent gastric hypersecretion is not especially satisfactory. There are two essential points to be borne in mind: (1) treatment during the attack, and (2) treatment between attacks. The treatment during the attack is the relief of the accumulated secretion by means of the stomach tube and lavage of the stomach with weak alkaline solutions or 1-to-1,000 silver-nitrate solution. When the pain is very severe, morphine hypodermatically or cocaine internally is indicated. Food should be allowed only between the paroxysms and that in small quantities, and preferably in a fluid form. Subcutaneous infusion or rectal enemata of normal salt solution are the best means of allaying the thirst, which is at times most intense. Since the disease appears to be a functional neurosis, the predisposing factors are constantly present, and hence constant tonic treatment of the nervous system is indicated during the intervals between attacks. The cold water treatment will often be followed by most satisfactory results. Strychnia, nux vomica, quinine, phosphide of zinc, arsenic and other well-recognized tonics are indicated, and the necessity of their almost constant use should be emphasized. Since the attacks are often precipitated by certain immediate factors, great care should be exercised in protecting the patient from all such factors, as over-indulgence of all kinds, and all psychical excitation. In addition a carefully arranged diet should be prescribed and insisted upon. Only in this way can one hope to render the attacks less frequent and less severe, and in some instances perhaps cause their entire disappearance.

BIBLIOGRAPHY.

1. Reichmann. Berl. klin. Woch., No. 40, 1882.
2. Rosenthal. Magencatarrh und Magenneurosen. Wien und Leipzig, 1886.
3. Boas. Ueber periodische Neurosen. Deut. med. Woch., No. 42, 1889.
4. Boas. Magenkrankheiten, Leipzig, 1896.
5. Bouveret. Les Maladies de l'estomac, Paris, 1893, S. 680.
6. Leube. Specielle Diagnose der inneren Krankheiten, Leipzig.
7. Ewald. Die Magenkrankheiten, Berlin, 1897.
8. Riegel. Die Erkrankungen des Magens. Nothnagel's Specielle Pathologie und Therapie, Bd. xvi, 2.
9. Rossbach. Deut. Archiv f. klin. Med., Bd. xxxv, 1885.

A NEW NEEDLE-HOLDER.[1]

BY GEORGE H. MONKS, M.D., BOSTON.

SOME two years ago I devised a needle-holder the clutch of which, so far as I know, is quite new. I have used this holder ever since, making a few changes from time to time. I have found it to be entirely satisfactory in actual work.

This holder has, I think, the following advantages over the instruments now in common use:

(1) When the jaws close upon the needle, the latter at once assumes its proper position *automatically*.

(2) The needle retains its exact position at right angles to the holder so long as the jaws grasp it; in fact, the needle and holder become for the time one instrument, as it were.

(3) Only slight pressure at the handles is required to hold the needle. This fact makes it possible to manipulate the instrument with a degree of delicacy and accuracy hardly possible with any instrument requiring a firmer grasp.

[1] This instrument was shown at a meeting of the Surgical Section of the Suffolk District Medical Society, December 6, 1899.

(4) The needle is released at once by relaxing the grasp and allowing the jaws to open.

The instrument is made by Codman & Shurtleff, of this city, and the Kny-Scheerer Company, of New York. A reference to the cuts, especially to Fig. 2, will make clear, I think, its construction and action.

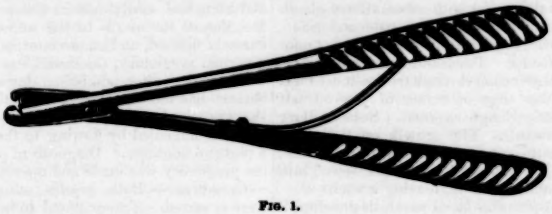


FIG. 1.

Fig. 1 shows the instrument just as it lies, with open jaws on the instrument table; and Fig. 2 presents these jaws on a larger scale.

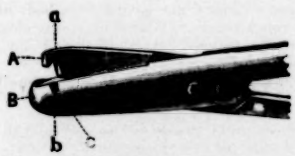


FIG. 2.

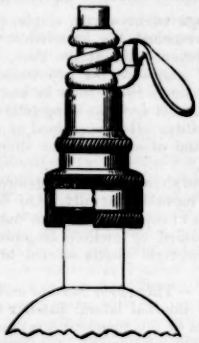
The lower jaw (see Fig. 2, B) consists of two pieces with an interval between, in which interval the upper jaw (A) plays, as the instrument is closed and opened. There is a V-shaped depression (a) in the upper jaw, and corresponding depressions (b) in the lower one. When the jaws close upon a needle, the V's of the lower jaw approach the V in the upper jaw until the needle is grasped between them. If Fig. 2 be examined closely it will be seen that the V's in the lower jaw seem to be filled up, as it were, by a tongue of metal (c) projecting from a part of the upper jaw. This projecting portion acts as an ejector, throwing the needle out of the V's of the lower jaw whenever the instrument is allowed to open. Though different kinds of handles have been used on the needle-holder, I think that shown in Fig. 1 is the best.

A SELF-CLOSING STOPPER FOR AN ETHER BOTTLE.[1]

BY L. R. G. CRANDON, M.D., BOSTON,
Senior Surgical Interne, Boston City Hospital.

FOR the purpose of saving ether and facilitating the work of the etherizer, I recently devised a self-closing stopper, which has been in practical use for the past six months on the surgical side of the hospital, and seems to have answered the above requirements. The stopper which is shown in the accompanying figure will exactly fit the common flat-topped sixteen-ounce bottle, to which it is to be screwed firmly. When it is necessary to refill this bottle, the upper part of the attachment only is unscrewed, and, after the bottle is filled, this is screwed on again.

To administer ether one has only to tip up the bottle and press the valve handle, thus opening the valve, and a continuous stream of ether is directed into the cone. When the pressure is relaxed, the valve closes automatically, and remains closed. The stopper is



manufactured for the hospital at the Grundy Brass Works, 50 Sudbury St., Boston.

[1] Exhibited by Dr. G. H. Monks at a meeting of the Surgical Section of the Suffolk District Medical Society, December 6, 1899.

Clinical Department.

MASSACHUSETTS GENERAL HOSPITAL. CLINICAL MEETING OF THE MEDICAL BOARD.

(Concluded from No. 11, p. 276.)

REGULAR meeting, December 15, 1899, DR. C. B. PORTER in the chair.

DR. C. B. PORTER showed the following cases:

I. SARCOMA OF TONSIL.

V. A., age forty-nine. Iron foundry laborer. Four months before entrance noticed a tight feeling at base of tongue. The left tonsil had been enlarging since that time. Has some pain on articulation, which has become more and more indistinct. Mastication is difficult and there is considerable dysphagia, the food seeming to catch behind the growth to drop later and cause choking. He has lost six pounds in two months.

Three days before entrance, after eating dry bread, he spat up some blood and had three attacks in two hours, during which he expelled numerous clots and swallowed considerable blood. No bleeding since then.

Examination showed pink, fleshy growth on left side, coming from behind tongue and blocking the fauces except for one-half inch below palate. Both sides of throat swollen, and both submaxillary glands enlarged and movable. Patient was pale and pasty, but not emaciated. Examination of piece of tumor showed lymphosarcoma. Tracheotomy with cocaine.

Operation.—Etherization through tracheotomy tube. Incision along lower edge of ramus of jaw on left side, and the digastric triangle exposed. Submaxillary gland turned downwards. The growth on the tonsil was then shelled out — one finger being in the mouth; very little bleeding. Submaxillary glands sewed into place, and the wound sewed up, leaving a wick.

Five days after operation facial paralysis developed. Tracheotomy tube removed one week after operation. Coley's treatment begun twelve days after operation, with one-half minim daily increase. Steady improvement. Discharged December 21st.

II. SLIPPING PATELLA.

D. O'L., age twenty-seven, single, porter. Seven years ago wrenched his knee while pole vaulting. There was severe pain at the time, and knee was swollen, stiff and sore for two weeks, although he could walk about. Since then he has hurt his knee several times, each accident being followed by a week or so of disability. He complained of a weak feeling in his knee and of a cracking or slipping of his patella.

Examination showed moderate genu valgus. Right patella very movable laterally. On flexing leg, patella was seen to slip outward onto outer side of femur, accompanied by audible crepitus, but no pain; no effusion, but right patella seemed higher than left when at rest.

Operation. — Three-inch incision on inside of joint, exposing the internal lateral patellar ligament. An elliptical piece of this ligament was removed, one-half inch wide. The joint was not opened and the wounds were united with kangaroo-tendon interrupted sutures. Twelve days after operation, up and about on crutches and a ham-splint. Discharged well, fourteen days after operation. December 15th, his patella is in good position, and motion normal.

III. CYSTS OF BOTH OVARIES; HYDATIDIFORM MOLE, REMOVED BY ABDOMINAL INCISION.

E. D., thirty-four, married. After last child, three years ago, menstruation did not appear for twenty months, when it was profuse and at abnormally short intervals. Condition relieved by repair of cervix. Menstruation normal since that time. Two months ago, at time of period, seized with pains that suggested labor pain, though she did not believe herself to be pregnant. Pain lasted four days and was accompanied by a "slightly brownish" discharge, which has persisted with some variation to present time. Was treated in Out-Patient Department for retroversion, with some relief. Six days ago "felt something snap inside," followed at once by a discharge of about one ounce of bright blood; no faintness. Two days ago a similar attack, but with considerable pain and "a large flow."

Examination negative, except for pelvis and lower abdomen. Color good, does not look anemic. Abdomen showed a rounded, boggy tumor, about size of grape fruit, slightly to the right of the median line and rising three fingers' breadth above the pubes. Vaginal examination showed the os soft, patulous and pushed forward with a mass corresponding to that felt in the abdomen and easily felt in the posterior cul-de-sac. Relation of the uterus to the tumor could not be accurately defined, and on account of the possibility of a normal pregnancy, the sound was not used.

Three days after admission, during which time the patient had more or less pain in the lower abdomen, she was seized with severe colicky pain in lower abdomen, accompanied by flowing to the amount of about a pint; no faintness. Diagnosis of probable extra-uterine pregnancy was made and operation advised.

Operation. — Both ovaries extensively cystic and were removed. Tumor found to be the uterus filled with a semisolid mass of such consistency that the uterus was much flattened from before backward by its own weight; not a normal pregnancy. Incision of uterus showed a typical hydatidiform mole. Uterus thoroughly emptied and curetted; cervix dilated from above, and a gauze drain passed from body of uterus down through cervix. Wound in uterus closed with animal-tendon sutures. Abdominal wall sewed up in layers without drainage.

Convalescence uneventful. Discharged well, thirty-one days after operation.

IV. DISLOCATION OF INTERNAL SEMILUNAR CARTILAGE; REMOVAL; GOOD RECOVERY.

J. P., laborer, married, age twenty-three. Six weeks ago fell into a ditch, striking the internal surface of left knee, wrenching and severely bruising it. The knee became swollen, painful, black and blue, stayed in bed one week, being treated with steam and massage, but without relief; walked with a rubber bandage for four weeks. During this time the knee caught very often, there being a sensation of something moving inside the joint. On entrance, the knee was not swollen, but painful, and caught more often than formerly. Examination showed the knee perfectly normal, except for slight tenderness just above internal tuberosity of tibia. X-ray negative.

Operation, on November 21st.—The knee-joint was opened by a curved incision, two and one-half inches long, along the inner and lower border of the patella. The internal semilunar cartilage was found tipped on edge, and external and anterior to its normal position. It was removed and the wound closed, the deep structures by animal tendon sutures, and the skin by a continuous catgut suture. There was increasing pain and tenderness of the joint for six days after operation, but without rise of temperature. On the sixth day the temperature was 100.8°. The dressing was removed and the knee-joint found distended, with a tender area above, and internal to the patella. A blood count showed 22,000 white corpuscles. Three sutures were removed, and several ounces of bloody serum evacuated, and a rubber-tissue wick introduced. The culture taken was pronounced sterile. For three days the temperature varied between normal and 101°, on the third day falling to normal and remaining so. The wick was removed on this day, and opening closed with *crêpe de lisse*. Recovery followed rapidly. Ham-splint removed twenty-four days after

operation. Good lateral movement of patella and flexion to 150°. Discharged well, four weeks after operation.

The convalescence in this case interested me exceedingly: (1) Because for six days after operation there was increasing pain and tenderness, with distention of the joint, and I feared that the operation had not been aseptic. On the sixth day, the temperature rising to 100.8°, and the leucocytosis being 22,000, I decided to open the joint. The fluid was bloody serum, and the culture showed it to be sterile, much to my relief, and the subsequent behavior of the joint proved this to be true; (2) it was shown, as far as one case can do so, that distention of the joint with sterile fluid can cause a rise in temperature and in the white blood count.

V. UNUNITED FRACTURE OF OLECRANON.

W. St. J., age twenty-three, single, freight-handler. Four months ago fell off step of his truck, striking right elbow. Was treated at outside hospital for sprain (Fig. 1). Examination of right arm shows a sharp prominence on a level with the condyles, with a

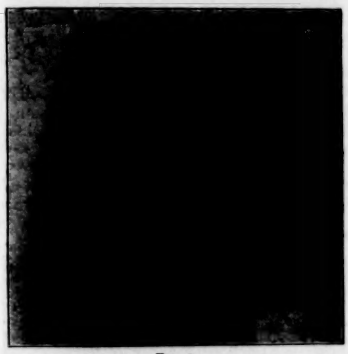


Fig. 1.

sulcus underneath it. In complete flexion the sulcus admits the whole of two fingers.

Operation. — Fragments wired; arm put up on straight anterior splint, reaching from finger-tips to axilla; large pad at elbow, so as to hold arm very slightly flexed.

November 20th. Straight splint removed; olecranon solid; pronation and supination almost complete; forearm flexed and placed in an adjustable internal splint of an angle of 120°.

November 21st. Discharged. Supination and pronation almost complete; flexion, 45°; extension, 120°. Later he reported motion good in all directions.

VI. FLOATING CARTILAGES IN BOTH KNEE-JOINTS.

D. H. M., age thirty-eight, surveyor. Fifteen years ago left knee suddenly collapsed while walking. He had great pain, and the knee remained one-fourth flexed for three months, causing him to walk on his toes, and then suddenly slipped back into place. This happened more and more often for thirteen years, and finally it slipped out almost every day. Two years ago two floating cartilages the size of walnuts were removed above the patella in Portland. After this pain persisted, but the knee was cured for one and one-half years, when it began to slip as before, although the patient could reduce the knee by pressing on the outside of the joint, and replacing some small cartilages. For the last three months the knee slips out very often, and he is prevented from working. He has never had any trouble with his right knee.

Examination showed small movable hard body, size of almond, on outer aspect of left knee, apparently under ligamentum patellæ. Best felt when knee is flexed, which causes audible crepitus. A walnut-sized, hard, ill-defined mass, under external ham strings, and a chestnut-sized, hard mass, not very movable, just above inner tuberosity, were also felt. On inner side of right knee a small, hard, round body was felt, and on outer side there was a sensation of small moving bodies on movement of joint. Flexion of left knee limited one-half; not limited in right.

Operation. — Four-inch incision on inside of left knee, through capsule. Twenty-five pea-sized, white, hard, irregular, slippery bodies removed. On outer side of joint, through incision not communicating with joint, three larger but similar bodies were removed from under the external ham-strings. Joint douched with salt solution, and incisions sewed up.

Fifteen days after operation, the patient was up and about on crutches, and discharged much relieved seventeen days after operation. Nothing further has been heard from this patient.

VII. FRACTURE OF RIGHT PATELLA.

J. F., age twenty-seven. Brought to the accident room with history of having fallen on his right knee. Examination shows marked distention of joint, which I explained as due to hemorrhage into joint, as the accident was only an hour previous, and no synovial effusion of such an extent could take place in so short a time. A transverse fracture was made out, with separation of fragments of one-half an inch. The leg was placed on a splint with ice bag to knee.

Five days after, operation was performed. A curved incision was made over joint, with convexity reaching below lower fragment. The flap was dissected up, exposing joint, which was filled with blood clots. These were cleaned away, the joint washed with normal salt solution and the fragments wired together; the rents in the capsule closed with tendon sutures; external wound sutured with fine catgut; splint applied. Convalescence uninterrupted. Discharged in four weeks, and had then one-third normal flexion. Had walked some on crutches, bearing weight on foot.

In showing these cases of fracture of the patella, I wish to emphasize some points in the treatment, and to call attention to the great gain in time by the method of wiring over the old treatment by strapping and fixation. One case illustrates a point which I have felt was important: That the union by buried wire is stronger than that by suture of the capsule and periosteum with catgut or tendon; that the presence of the buried wire suture holds the fragments so firmly that the motion may be safely allowed some weeks earlier than where the approximation is made with weaker or absorbable materials.

The case which I now show, G. W. B., had a simple fracture of the patella on June 10, 1899, and the

fragments were sutured through the periosteum and capsule on June 14th, by Dr. Elliot. Passive motion was begun on July 18th. On July 19th, up on crutches. On October 29th he reported at the hospital; had used his leg for over a month; flexion was then three-fourths of the normal amount, without pain.

On November 5th he slipped while going down-stairs, and his injured leg was violently flexed under him. Examination showed a refracture at the old place. On November 11th another operation was done and the fragments wired together. On December 3d he was up and about on crutches, three weeks after operation. On December 15th, five weeks after operation, he walked a mile or more to the hospital with only a cane, with flexion to an inch more than a right angle. To the older surgeons, accustomed to a protracted convalescence after this injury, so good a result in so short a time seems remarkable.

VIII. COMMINUTED FRACTURE OF HUMERUS.

C. W., seventeen, single, brought to accident room at 6 P. M., with history of having arm crushed while at work at a steam wringer. Examination shows the right arm swollen almost to twice its normal size from shoulder to elbow. Along the outside just below the shoulder is a small wound bleeding slightly. X-ray showed comminution of humerus into four fragments. On operating, the shattered end of the upper fragment was found displaced outwards. Below this was a short loose fragment which was displaced inwards and rotated on its long axis. A four-inch incision was made, beginning just above the insertion of the deltoid, and continued through the muscle to the bone. The middle fragment, which was rotated on its long axis, was loosened after considerable manipulation, so that it could be swung round on its axis again and made to fit into the upper fragment, which was pushed into position. The ends of these two fragments were brought together with silver wire and were adjusted into fair position. The muscle was sewn over it with interrupted kangaroo tendon. The arm was put up on an internal angular with coaptation splints and bandaged up with a large absorbent dressing. On reaching the ward the hand was placed on pillows and the whole extremity swathed to the body.

On November 2d, arm strapped to side with a plaster swathe; rests on body, hand being held with a pillow. On November 5th, patient up in steamer chair; hand supported with a sling and four-pound weight attached to elbow. On November 9th, arm put up with coaptation, internal angular splints, plaster swathe and shoulder cap. On November 20th, coaptation splints reapplied; plaster shoulder cap, plaster swathe and sling at wrist. On November 29th, bones in good position; anterior posterior line good; union firmer. On December 8th, discharged, wearing the splints.

Some weeks later the splints were removed and the union firm throughout whole of humerus. This was the worst comminuted fracture I have ever seen, and the result is good beyond all expectation. There was no shortening.

IX. FRACTURE OF SURGICAL NECK OF HUMERUS, WITH DISPLACEMENT OF HEAD OF HUMERUS.

A girl, thirteen years of age, fell while swinging, striking on the left shoulder. The shoulder was dressed, but at the end of two weeks, after the swelling had subsided, the attending surgeon was not satisfied that the condition was as good as it should be (Fig. 2).

The case was brought to me. An x-ray picture showed the condition to be a comminuted fracture at

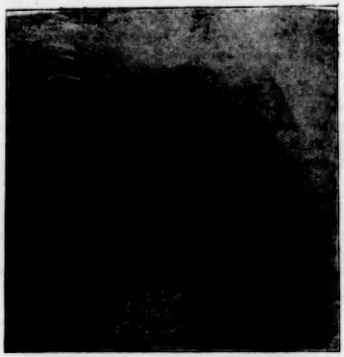


FIG. 2.

the surgical neck, with displacement by rotation of the head of the humerus. I advised open section, with wiring of the fragments. This was done, the incision being made through the anterior fibres of the deltoid. The small fragment seen in the photograph was removed (Fig. 3). The head and shaft of the bone were wired and the wire twist hammered into the bone. The convalescence was uneventful, and some weeks

FIG. 3.

afterward the motions of the joint were good. The photograph taken after the operation shows the perfect position of the fragments.

X-RAY PLATES OF TRAUMATIC SEPARATION OF EPIPHYSIS.

DR. CHARLES L. SCUDDER showed the tracings of x-ray plates taken from three cases of traumatic separation of the epiphysis. The first case was that of a

boy eleven years old who had a separation of the lower femoral epiphysis. Reduction by manipulation having proved unsatisfactory, an open fracture was made and the epiphysis reduced. The result was good as to function, with slight lameness six months after the operation. The second case was that of a boy of six years with a separation of the upper epiphysis of the humerus. He recovered with a useful arm. The x-ray showed some bony deformity. The third case was that of a girl, seven years old, who had a separation of the lower epiphysis of the humerus. She recovered with a useful arm after manipulation, reduction and immobilization upon an internal right-angle splint.

Especial emphasis was laid upon the importance of an accurate diagnosis in all injuries to the epiphysis. The development of the epiphyses of the humerus and femur was illustrated by two series of bones from the Warren Museum, loaned for the purpose by Prof. Thomas Dwight. Many obscure injuries to the neighborhood of joints are injuries to the epiphysis. Many so-called fractures in the neighborhood of joints are complicated by involvement of the epiphysis.

The development of the x-ray makes diagnosis more exact. The development of the aseptic method of treating operative wounds makes operative interference in these closed injuries safe and, because safe, justifiable. The open treatment of closed fractures and epiphyseal separation is coming to be more and more the surgeon's duty if he is to accomplish the most for his patient.

STRANGULATED DIAPHRAGMATIC HERNIA.

DR. S. J. MIXTER showed this case: G. H. M., twenty-nine, single, plumber. Always well. Four days ago, following several minutes' violent exercise pumping at a pumping machine, he had severe pain near the navel and fell over in a state of collapse. Pain continued all the next day and he was given a laxative that night. The following day he was given an enema, which was followed by a small movement of the bowels. Has passed no gas since. Temperature has been normal till yesterday and pulse about 90; to-day, temperature 101° and pulse 145. Has had vomiting off and on for past two or three days.

Physical examination. — Well-developed and well-nourished, muscular man. Some abdominal distention, but no extreme tenderness, as is indicated by the fact that when he was about to leave his home for the hospital he jumped up and started to snap on his trousers in the usual way. Seen by Dr. Mixter in accident room. Operation was decided upon; ether.

Operation. — Abdominal incision five inches long in median line. Small intestine found to be greatly distended. Bowels allowed to come out through the wound and kept warm with hot towels. Nothing found in pelvis or appendix regions. Small intestine punctured to allow escape of feces and gas. Intestine sewed with intestinal sutures and returned in abdominal cavity. Incision now enlarged upward to a coil of intestine found passing upward through middle of left lobe of diaphragm. It was impossible to pull the coil back into the abdominal cavity, so the opening in the diaphragm was enlarged anteriorly and outwardly about an inch. Dr. Mixter then passed his hand up through the opening and succeeded in pulling down this coil of intestine and also a large part of the great omentum.

The omentum and intestine were both gangrenous and the latter was perforated. Every respiration now sucked in air through the abdomen, just as the air is sucked in and out in a case of empyema. The patient was by this time in such a critical condition that the operation was brought to a close as soon as possible. The contaminated peritoneal surfaces were hastily cleaned. One towel was placed deep down against the opening in diaphragm and the upper end of long incision wicked, while the lower three-fourths of the wound was sewed up tight with interrupted silkworm-gut sutures; dry dressing and swathe. The patient did not recover from the shock and died in fourteen hours.

DR. J. G. MUMFORD reported the following cases:

I. A CASE OF ACUTE GENERAL PERITONITIS; OPERATION; RECOVERY.

I make this report because it is still necessary, in the present state of our knowledge, and in elucidating this extremely grave condition, that all cases should be reported and causative factors investigated thoroughly. The history of the case is, in brief, that of a young man twenty-five years old, whom I show here. On the third day of his illness, which began with sudden, acute, right-inguinal abdominal pain, and with vomiting, he was brought to the hospital. There was general abdominal distention, pain, tenderness, spasm of the right rectus, and tenderness high in the rectum. Pulse 120, temperature 102° F. The condition obviously was one of appendicitis, with a rapidly spreading or general peritonitis.

An incision was made through the right rectus muscle; a few delicate adhesions were found and an appendix, gangrenous, perforated, free; the peritoneal cavity filled with a thin pus, the intestines distended and injected. The appendix was tied off. A second incision was made, this time through the left rectus, just above the pubes. The pelvis and whole abdominal cavity were thoroughly washed out through both openings with six gallons of hot sterilized salt solution; two ounces of a saturated solution of Epsom salts were injected into the colon; the wounds were deeply wicked; the belly was left full of the salt solution and the patient put to bed with "postural drainage."

On the next day the bowels moved freely, and from that time on the convalescence of six weeks was steady and uneventful. He is now well.

Several cultures taken from both wounds and the appendix showed pure cultures of the bacillus mucosus capsulatus, one of the least virulent of organisms.

II. A CASE OF CHOPART'S AMPUTATION, WITH TENDON IMPLANTATION AND TENOTOMY.

This case I report on account of the treatment employed for the stump, and the interesting mechanical problem involved. The patient was a boy of five whose toes had been crushed by a trolley car. So great was the laceration of the soft parts that a medio-tarsal amputation was required. A plantar flap was secured sufficient to cover in the stump, and an attempt was then made to obviate the condition usual in this amputation, which so commonly results in a very sensitive stump.

The cause of this usually sensitive stump is evident at once on a glance at the anatomy. The foot is left to rest on the heel bones, but the extensor ten-

dons being all cut, the tendo Achillis is left unopposed to pull up on the os calcis, and as a result the body's weight comes to be borne on the severed astragalus and its new coverings, in large part.

A tenotomy of the tendo Achillis would obviate this for a time, but with reunion of tendon the deformity would be reproduced. To correct this condition I took the cut ends of the extensor longus digitorum and of the tibialis anticus and stitched them firmly to the periosteum of the astragalus and os calcis. In order to overcome any dragging on the implanted tendons, the tendo Achillis was divided subcutaneously. The plantar flap was then brought up and the stump covered in. The wound healed kindly, and six weeks later the boy was walking on the stump.

After a lapse of six months I sent for him, and was much gratified with the condition he presented. He walked with a slight limp, to be sure, but freely and without pain. He had strong and voluntary control of the motion of his heel through an arc of about fifteen degrees.

I advise strongly the trial of this method whenever possible in cases of mediotarsal amputation.

TRAUMATIC RUPTURE OF ECHINOCOCCUS CYST OF LIVER.

DR. C. A. PORTER reported this case. An Italian boy of seventeen entered the accident room on July 13, 1899, in Dr. J. W. Elliot's service. At 5 P. M. he was in his usual health, but had been eating largely of watermelon, when he was kicked in the epigastrium by a companion. The past history obtained from his father showed that he had been very thin for several years except for his upper abdomen, which has been very prominent for as long as the father could remember. The boy was unable to rise after the kick and was brought to the accident room about 6 P. M. by the police. He had vomited several times vast quantities of undigested melon; there was no blood. He complained of great pain in the upper abdomen, and at 9 P. M. was walking about the etherizing room howling with pain.

Physical examination showed a poorly developed and nourished boy, hollow-eyed, pale, anxious, pinched expression; tongue not coated; upper part of chest hollow; supraclavicular spaces retracted; liver dulness on the right up to the fourth rib anteriorly; lower ribs flared outwards and were very prominent, particularly on the right. The heart apex was in the fourth space, mammillary line; no murmur; lung examination negative. Abdomen prominent and much distended, especially in upper half; abdominal muscles rigid as a board, dull in both flanks and in hypogastrium; stomach tympany present and not abnormally large; wave of fluctuation easily obtained from side to side. Bladder contained four ounces of normal urine. An enema had been followed by much gas and normal feces. No tumor could be felt. The abdomen was universally tender, but the tenderness was most pronounced in the upper right quadrant. Temperature 102°; pulse 120, poor quality; respiration 32. A leucocytosis of 32,000 was present.

The diagnosis could not be made. It seemed as if peritonitis was present, but whence the several quarts of fluid suddenly arose could not be determined. The bladder and stomach were normal; the boy's condition, though poor, seemed to exclude so large an abdominal hemorrhage. Rupture of a hydronephrotic kidney, pre-existing ascites or tuberculous peritonitis was thought possible.

Operation. — An incision six inches long was made through the right rectus muscle; about three quarts of bloody fluid, not turbid or purulent, escaped. In the left flank a blood clot the size of two hands was found. On examining the pelvis, a collapsed cyst wall was discovered lying free among the intestines. The cyst wall was yellow, elastic, laminated and quite typical of an echinococcus cyst. The incision was immediately enlarged upwards to the rib margin and the upper surface of the liver explored. The whole right lobe was a hollow sheet and close to the diaphragmatic attachment of the liver, just to the right of the suspensory liagment, a ragged hole could be made out about the size of an orange. The thinned liver tissue was incised downwards to the lower border of the organ; many clots of blood were sponged out from the cavity; no bleeding point could be determined, so the margins of the cavity were sewed to the abdominal wound, so far as possible, and the hole in the liver firmly packed with gauze, the whole abdomen having been previously flushed with hot salt solution. Microscopic examination of the fluid by Dr. W. H. Smith showed no hooklets or bacteria. Cultures were sterile. The examination of the cyst wall by Dr. Wright showed that it was a typical inner membrane of an echinococcus cyst.

Subsequent history is not of great interest. The boy had considerable fever from eventual suppuration in the cyst wall, but by December had gained twenty-five pounds in weight; no signs of recurrence of the disease, and only a small sinus admitting the little finger to a depth of three inches remains under the right rib margin. From this sinus, however, there is a free discharge of bile-stained fluid.

Medical Progress.

REPORT ON PROGRESS IN THORACIC DISEASES.

BY GEORGE G. SEARS, M.D., AND JOHN W. BARTOL, M.D., BOSTON.

(Concluded from No. 11, p. 279.)

THE TREATMENT OF ANEURISM OF THE AORTA BY SUBCUTANEOUS INJECTIONS OF GELATINE.

PROFESSOR STOÏCESCO,[9] of Bucharest, has reported six cases of aneurism of the aorta and innominate artery treated by this method with striking results. A woman, aged thirty-six years, had aneurism of the ascending aorta. There was considerable dyspnea and the patient could not lie on her back. The face was edematous and cyanosed and the veins of the neck were dilated. A pulsatile hemispherical tumor occupied the first and second right intercostal spaces. On March 3d, 83 c. c. of a one-per-cent. solution of gelatine were injected subcutaneously; on the 6th, 105 c. c.; on the 9th, 120 c. c.; on the 16th, 120 c. c., and on the 25th, 120 c. c. The tumor became harder and the expansile movements less pronounced, while the dyspnea and the difficulty of the circulation were much diminished. The patient left the hospital and was lost sight of. In another case a woman, aged fifty-

[9] Journal de Médecine Interne of July 18, 1899 (inserted in Lancet, September 16, 1899).

five years, had aneurism of the innominate artery. In the right subclavian region was a pulsatile tumor the size of an orange. On July 15th, 80 c. c. of a similar solution were injected. On the 17th the tumor appeared smaller and firmer and the pulsations were less superficial. On the 25th, 100 c. c. were injected, and on the 27th the tumor was reduced to the size of a pigeon's egg. On April 5th, 100 c. c. of a two-per-cent. solution were used, which was followed by intense pain at the seat of the injection. The tumor progressively decreased to the size of a filbert and the pulsations were no longer superficial. On August 8th the patient was discharged completely cured.

On March 8, 1899, she was again seen and the tumor found to be of the same volume as at the time of her discharge. In another case of aneurism of the ascending aorta the patient died two hours after a single injection. The arch of the aorta was found to be dilated in its whole extent and presented a large sac in its right half which contained some organized clots and one recent clot. In the left carotid artery, about six cm. above its orifice, was a recent clot one and one-half cm. in length. The injection was found to have been completely absorbed. In the other cases the results were very satisfactory and in one (aneurism of the innominate) the patient was long enough under observation to enable the permanence of the results to be proved.

THE REMOTE PROGNOSIS OF PERICARDITIS.

In order to determine, if possible, the factors which influence the ultimate prognosis in any individual case of acute pericarditis, Sequeira [10] has followed up the after history of 130 cases which were in the London Hospital from 1890 to 1897, 100 of which came under his personal observation. He finds that "the remote prognosis of pericarditis depends in the main upon the amount of dilatation of the pericardium." The dilatation is due to the softening of the sac by inflammation. It may occur at once before the patient has recovered from the acute illness. It may be brought on by a too early resumption of work after the acute attack, or it may be due to the patient keeping about while there is latent inflammation of the sac. The dilatation may be progressive, and then compensation can never be established, but a similar result occurs if the primary dilatation be excessive.

The adhesion of a dilated pericardium to the chest wall, while it renders the condition of dilatation permanent, may be of advantage when the adhesions become consolidated, for the thick sac acts as a support to the cardiac cavities. If the dilatation of the sac is not very great, the support thus afforded in some measure replaces that of the normal pericardium; but as the cardiac envelope is dilated beyond its normal dimensions so also is the heart. In these abnormal conditions there is a great tendency for the compensation to be impaired. Such cases may live for years after the original attack; but they are subject to frequent breakdowns, and are in a precarious state. If the pericardium is undilated there may be universal adhesions, but these are of no moment.

As regards age and sex, the young cases show a greater tendency to dilatation of the pericardium, and therefore are worse than the older patients. The period during which there is a rapid increase of the body weight is one which is especially trying to a heart working in a dilated pericardium. In girls who have suffered from pericarditis in childhood, and in whom compensation has been more or less established, the failure is almost certain to take place between the thirteenth and fifteenth years. In women the years of heavy work, pregnancy and parturition are those in which failure of the heart is prone to occur. In boys the failure occurs later than in girls — in the sixteenth and seventeenth years, or in the years of early labor. In adult males the prognosis is good, but heavy work, especially soon after an acute attack, leads to dilatation of the softened sac and consequent failure of compensation.

[10] Medico-Chirurgical Transactions, vol. lxxxii, 1899.

VENOUS STAGNATION IN AORTIC REGURGITATION DURING PERFECT COMPENSATION.

Grawitz [11] discusses the cause of the considerable enlargement of the liver and spleen where the signs of back pressure in the pulmonary circuit are wanting. He considers it due to the pressure of the hypertrophied and dilated left ventricle on the inferior vena cava, while the collateral circulation in the vena azygos explains the absence of circulatory disorders in the lower limbs.

GONORRHEAL ENDOCARDITIS.

Loeb [12] makes the occurrence of a case of ulcerative endocarditis in which gonococci were demonstrated in the valvular lesions an excuse for a short review of the subject with reference to previously reported cases, and draws the following conclusions:

(1) Amongst gonorrheal patients there develops in certain instances an endocarditis, either in direct association with the acute catarrhal stage, or, as is more common, as an accompaniment of a joint manifestation.

(2) Apart from occasional observations in which bacteriological examination demonstrated streptococci, and the endocarditis accordingly is to be considered part of a pyemic infection, gonorrheal endocarditis is a genuine metastasis caused by gonococci.

(3) It occurs in two forms: endocarditis verrucosa and endocarditis ulcerosa. In the former it is generally the mitral valve which is affected, resulting in permanent valvular defect or in *restitutio ad integrum*. The ulcerative form almost always attacks the aortic valve and relatively often the pulmonary.

(4) Endocarditis ulcerosa of gonorrheal origin occasionally attacks normal valves, but generally develops in valves that have been the seat of former disease.

(5) As in the ulcerative form of endocarditis in general, so also in the gonorrheal form the female, in proportion to total number of infections in that sex, is relatively often attacked.

THE EFFECT OF THE DIPHTHERIA TOXIN ON THE HEART.

The results of Rolly's [13] investigations are interesting from the light they shed on the causes of the cardiac symptoms which develop after infectious diseases, and on the locality in which the effect of the toxins is most felt. He sums up his conclusions as follows:

(1) In diphtheria poisoning paralysis of the heart immediately follows the fall of blood pressure caused

[11] Deut. med. Woch., No. 20, 1899.
[12] Deut. Archiv f. klin. Med.
[13] Arch. f. Exper. Path., 1899, vol. xlii.

by paralysis of the vasomotor centre, and, in spite of artificial respiration, soon leads to death.

(2) This effect of the poison on the heart is a direct one, and appears independent of the central nervous system in the isolated hearts of warm-blooded animals.

(3) The cardiac paralysis develops after a long latent period, at a definite time after the poison is administered. Even the direct injection of diphtheria poison, or the transfusion of diphtheritic blood taken just before death, never immediately affects the normal isolated rabbit's heart. A longer or shorter latent period is always necessary.

(4) On the other hand, the heart isolated after being poisoned by the diphtheria toxins stops at the expected time, whether it is washed out with normal blood after the beginning of the first symptoms of intoxication or before them.

(5) It follows that there must be a gradual accumulation and fixation of the poison in the heart, and explains why functional heart disturbances can appear after the acute infection has run its course.

INFLUENZA AND THE HEART.

In the Hunterian Lecture[14] Sansom discourses on the effects of influenza upon the heart and circulation. After some general considerations on the character of the infection as a whole, and the likelihood of certain forms of it being mistaken for rheumatism, he gives a descriptive résumé of cases coming under his own observation when the heart was especially implicated, reverting for statistical details to a former report by himself of 100 cases. Of these 100, there was tachycardia in 37; bradycardia in five; irregularity in 25; pain at the heart in 23, and organic disease in five. He notes that whereas in the cases of tachycardia and irregularity the subjective symptoms were lacking or of slight importance, in several of the cases of bradycardia there was great distress, severe pain, or symptoms of syncope, making prognosis in this affection much less favorable than in the other two. In most respects, however, these manifestations of functional irregularity of the heart's action, due probably to effect of toxins on the nervous system, do not differ from similar phenomena in other conditions, and the treatment of them should be based on rational grounds.

Those cases, however, which he has classified as having precordial pain as the dominant symptom, and which he formerly considered as instances of neuritis or visceral neuralgia with favorable prognosis, he now thinks are, in part, instances of acute aortitis; an inference founded on post-mortem investigation in a few cases. In these cases of organic change the prognosis is bad, and treatment chiefly symptomatic.

In the same connection it is interesting to note the demonstration by Austin[15] in three cases of endocarditis of a bacillus, occurring in great numbers and apparently in pure growth on the diseased valves, which agreed perfectly in morphological characteristics with Pfeiffer's bacillus and lacked only success in attempts at culture for positive identification. All three cases represented anatomically the engrafting of an acute (in two cases ulcerative) process on an old endocarditis. In one case the pulmonary valves alone were affected, in one the mitral only, and in the third, aortic, mitral and tricuspid.

[14] Lancet, October 21st.
[15] Johns Hopkins Hospital Bulletin, October, 1899.

CARDIAC ARRHYTHMIA.

Ebstein[16] discusses rather diffusely the etiology of this condition, having especial reference to myocarditic fibrosis. He reviews at some length recent literature, and after referring briefly to sundry well-recognized etiological factors and giving a classified table of 21 autopsies, he concludes that arrhythmical heart's action in men or animals is the expression of an increased demand on the heart, when the chambers are overfilled with blood, and when a disturbed relation exists between resistance in the circulation and the heart's force. From the single symptom a positive conclusion as to cause and duration of the condition cannot be reached, but must rest on careful investigation of various possible causes. His own investigations have shown the importance in this relation of myocarditis fibrosa, myofibrosis cordis (Dehio), fibromata of the heart, and the so-called "kugelthrombe."

[16] Deut. Archiv f. klin. Med., September 29, 1899.

Reports of Societies.

SURGICAL SECTION OF THE SUFFOLK DISTRICT MEDICAL SOCIETY.

F. G. BALCH, M.D., SECRETARY.

REGULAR meeting, Wednesday, December 6, 1899, DR. J. W. ELLIOT in the chair.

DR. MONKS showed a

SELF-CLOSING STOPPER FOR AN ETHER BOTTLE,[1]

designed by DR. CRANDON, of the City Hospital.

Dr. Monks also showed a

NEEDLE-HOLDER,[2]

designed by himself.

DR. C. L. SCUDDER read a paper entitled

THE OPEN OR OPERATIVE TREATMENT OF FRESH FRACTURES; IS IT EVER JUSTIFIABLE?[3]

DR. C. B. PORTER: The subject of the paper for this evening is one to which I have given a good deal of thought, and about which my ideas have been crystallizing many years. Concerning certain fractures, as that of the patella, I am no longer in doubt. The almost universal success in the treatment of ununited fractures by exposing the seat of fracture, refreshing the ends and wiring, should have led the surgeon, it seems to me, long ago to expose and wire simple fractures when it is at all difficult to get them in good position by apparatus. It is a well-recognized fact that the adjustment of fragments in compound fractures is more satisfactory in many cases than in simple fractures. Wiring of the fractured ends makes the union at once stable. The accurate adjustment in simple fractures is many times impossible.

In connection with fracture of the patella, for many years attempts have been made to shorten the convalescence by a variety of sutures placed in a different manner by different surgeons, but all looking to

[1] See page 296 of the Journal.
[2] See page 297 of the Journal.
[3] See page 289 of the Journal.

the better coaptation of the fragments. You are familiar with those different methods.

Some of the reasons for suture of the patella. — In the first place, the shortening of the convalescence; second, the better and closer relation of the fragments; third, the cleansing of the joint of blood; fourth, the removal of portions of capsule or periosteum from between the fragments. All recognize that one of the conditions in the non-union of fracture of the patella by bone is that some portion of the soft parts has fallen between the ends and they cannot be approximated so as to get bony union and these can only be removed by an open section of the joint. That is also true with regard to other fractures. There are certain cases in which it should not be done, it seems to me. There are certain people who would not submit to the operation, and therefore they would have to take the long convalescence of the old treatment. The class of people in whom it should always be done is the working class, who are obliged to support themselves and their families, and where the advantage of six to eight weeks to which we are coming, I think, in connection with wiring the patella, instead of a year to eighteen months, as it used to be, is a matter of very grave concern, and I was urged into doing some of the earlier operations for fracture of the patella by the fact that the patients could not possibly put up with a long convalescence. Phelps, so far as I know, has given the statistics of the largest number of cases of wiring of the patella — 116 cases, with only one death, and that from delirium tremens. I have said much on this subject before this Society and it is not best to repeat it, except to emphasize that I do feel that silver wire is a much better material with which to suture the patella than any of the soft materials which are absorbed in a short time; that just so much stronger as is the silver wire than the silk or catgut, so much stronger is the union for all time, because the wire in the majority of cases can be left in.

Next to the patella in frequency of treatment by wiring is fracture of the upper end of the humerus with dislocation inwards of the head of the bone. The case which I have to show here is one which happened in another city, and had been under the care of very competent surgeons for two weeks, and they found it impossible to make an accurate diagnosis as to what the lesion was, and the case was brought to me. I recognized that there was a dislocation, malposition of the head of the humerus, with a fracture, and so stated. The child was placed in my hands for treatment and I made an open section in front of the shoulder through the deltoid and reduced the head of the bone and wired the two fragments together, and I will send the pictures of the condition before and after around.

In fractures of the olecranon the necessity for the elbow to be kept in the position of extension is very pronounced and the position is extremely irksome. With the olecranon wired the position can be varied to a considerable angle, as I will show in a case which is quite recent. These two photographs are the before and after of the olecranon. This man five months before operation fractured his olecranon and up to that time had not been able to do any work. Four weeks ago I operated by the open method and wired the olecranon to the shaft of the ulna. (The man shows what he can do.)

I have here another picture which I will show, in which the wiring operation was done in 1892. A gentleman was kicked by a polo pony in the elbow, producing a compound dislocation of the elbow, with a fracture of the olecranon. The fracture was reduced and the olecranon was wired. It exhibited a perfect use of the elbow-joint. I have spoken of some of the reasons for wiring particular fractures, and it seems to me it would be well here to consider it as a usual or universal means of treating fractures in which good adjustment cannot be obtained. We have all had to deal with ununited fractures, and although the vice of constitution is occasionally at fault, in the majority of such cases malposition or the interposition of some of the soft parts is at fault. These conditions can only be remedied by exposure of the fracture and proper adjustment of the fragments, and the time of convalescence can be much shortened.

This young man works in a laundry. His arm was caught in a wringer and he was thrown around in a manner which he does not remember at all. He was found insensible, with multiple fractures from the elbow to the shoulder. He was brought to the hospital, and on the same evening, having had a skiagraph taken, he was found to have multiple fractures of the humerus. I found the upper fragment pointing outward and overlapping the one next below; the middle piece was rotated on its long axis about half, and the lower third of the bone was comminuted. I felt that nothing short of the open method would enable me to get those fragments into anything like good position and so I cut down upon the point of fracture of the middle and the upper fragment, and then with a pair of incisor forceps took the middle fragment and twisted it so that it came into place and wired the fragments together. I thought it unwise to do more than mould the lower pieces into shape, and all the fragments are now in very good position, as you will see by the pictures. I think any one can see from the contour of the arm that the line of fragments is good. The whole extremity was so swollen that no retention apparatus could be put on for a week. The arm was laid on a pillow with an internal angular splint, with a mass of dressing to make it as firm as possible. As soon as the swelling went down the shoulder splint was applied.

I was surprised this afternoon when I went to get the skiagraph of a case I operated upon in 1896, to have Mr. Dodge say the skiagraph of that leg was the first he took. This was the case of a lady, brought into the private ward, injured by a bicycle accident. It was impossible to get the fragments into position. I had a talk with her husband after some days, and said I did not want to speak to her unless he thought something would come of it, and that was, if she would consent to have that fracture made compound, and the bone wired she would get a better leg. She consented. At the time the operation was done, when the wire was put in and the fragments adjusted they came in nearly perfect position. Some weeks afterwards when we had another skiagraph taken it was found there had been a sagging of the lower fragment. The lady never knew that. The skiagraph showed that in spite of the wiring it was faulty in that respect. It seems to me I should have put in two wires instead of one.

We have all of us, I think, been slowly coming to the conclusion that in the majority of cases fracture

of the patella should be treated by the open method, and some have not yet made up their minds as to what is the best method, whether it shall be by suture of one material or another. I have two cases to show that I think will illustrate the advance that has been made in the treatment of fracture of the patella in the last few years. The first case that I will show fractured his patella some months ago, and the capsule was sutured by catgut, if I recollect aright (not a case of mine), and he came to the hospital to show what a splendid result it was, and it seemed as though there was bony union. There was perfect position. He fell a few days afterwards and refractured the patella. There are one or two points about this case I want to speak of, and that is, one of the dangers in doing the operation is that of sepsis of the joint, and Phelps speaks of the necessity of having the wound as far as possible away from the joint, not directly over it. You will see from my flap, that I have gone below the patella and turned up a good large flap and brought the fragments together, then the capsule is sutured and we have only the skin sepsis to dread. It is four weeks next Sunday since the operation, and he already has this motion. I suppose to the younger men it does not seem like much, but to the older ones, who saw such cases treated a year or year and a half before being allowed to do as much as that, it seems really quite marvellous.

This is another case of fractured patella, operation done ten days ago. Here is a case that comes to the hospital with the history that an hour before he had fractured his patella. The joint was half as large again as it is now, but showed no discoloration. I said to the students at that time: "That is blood clot, because nothing could make such an effusion into the joint in an hour except blood clot," and in the course of a few days it all commenced to show through and the whole joint was ecchymosed. We waited a day or two, treating with ice bags and rest, and he suffered a great deal of pain from the distention of the joint. I opened the joint; found it full of blood clots. Down in the outer corner, there having been so much bleeding, there was ecchymosis of all the tissues. I put in a little gauze drain. That was taken out two days afterwards and the wound closed with ordinary sutures. Now the wound is healed. There is some motion in the joint.

DR. ELLIOT: I have a few cases I will show before the discussion goes further, in order that the patient may go home. In regard to the patella that Dr. Porter mentioned as being operated at its first break by some one else, I was the surgeon who had charge of that patient and it was sutured by catgut sutures. This patella was broken into three fragments and the patient was walking around in eight weeks after the operation, and went home in twelve weeks and appeared six months later at the clinic showing a good result. Then he fell down a flight of stairs and it is interesting to know that he fractured his patella in only two pieces, whereas originally he broke it in three, so at least one line of catgut sutures held well. While I am on this subject, one of the important points in the open treatment of fractured patellas is that whenever we are in doubt about wiring, if we have an x-ray taken the doubt disappears at once. In some of my cases the fragments were thus shown to be in a position impossible to bring together with coaptation splints in the old way. Occasionally I have found one fragment tipped up so that if you squeezed it against the other the articular surface of one would come against the fractured surface of the other. In such a case I have opened the joint and easily brought the two fractured surfaces together with a few catgut stiches. This gave a good result, with no separation of the fragments, and the patient walking about in six weeks instead of months.

Dr. Elliot then presented another patient, saying: This patient had one of the most difficult fractures to manage that occur, that is, fracture of the head of the humerus, and here are the x-ray photographs, the before operation and afterwards. The head of the humerus was widely separated from the shaft and we tried to pull it into place under ether, but it was impossible. On seeing by x-ray what the condition was, and exactly where the ends were, I was able to bring them together and wire them. In this case there was a notch in one bone which fitted beautifully into the other bone. So there was no tendency to displacement. The result is almost perfect. The entire shaft of the bone is straight and clear; there is no thickening. There is a little atrophy of the deltoid, due partly to the original injury and partly to the cut made to expose the bone.

Dr. Elliot showed another patient. This man came into the hospital with a tumor of his clavicle. He was examined by several of the surgeons and one of the opinions was that it might be a sarcoma. There was a very large lump on the clavicle. He was an electric-car motorman. No history of injury or fracture; simply it became disabled and he could not work his car. On careful examination of this lump and with x-ray photo I found it was an ununited fracture, and cutting down on it I cut out the enormous callus, wired the ends of the bone, and he is now braking a motor car. The open treatment has in this case restored a disabled man to normal activity.

DR. GAY: One who remembers the treatment of fractures for a third of a century cannot but be very agreeably surprised at the exhibition that has been given here to-night. Thirty years ago a compound fracture was about as frightful a thing as was brought into the hospital in the way of an accident. Amputation for compound fracture was a very common affair. Nowadays, I presume, some of the students go through their whole four years and never see such a case as that. The accidents that used to follow the compound fractures were more severe than the fractures themselves. I refer to the septicemia, sloughing, necrosis, etc. A case of compound fracture which became simple within a week was something talked about for six months; it was a very rare affair. The idea of operating upon a fractured patella never entered our heads in those days. The rule was three months in bed, three months with stiff bandages, and afterwards orders or admonitions to be very careful for another six months, making about a year in all. The result was a union by a ligament, which varied in length from one to four inches. Well, those legs were sometimes pretty good legs. I have seen a case of fracture of the patella in each leg with a separation of two or three inches, and that man could go upstairs with a cane pretty well.

It seems to me that the point is not quite settled as to whether wiring a patella gives you a result that is as free from subsequent injury as is the old method.

It undoubtedly gives you a better knee, better limb, but the force that broke it in the first place will break it again. I speak feelingly of that, because it fell to my lot to operate a second time four months after a man had his patella united by suture; he got a perfect result, but in opening a door the door stuck, the knob came off, he fell over backwards and tore his patella open a second time. Now, if that had not been wired, but joined by a ligament, of course he would have stretched the ligament, but would not have broken his patella. That is not an objection to the operation, merely one of the phases of the two methods of treatment.

In young or middle-aged people, unless there is some special vice of the constitution, I believe thoroughly in treating fractures of the patella by the open method. When you come to fractures of the tibia and fibula — the oblique fractures of the tibia and fibula — I am not quite so sure about it. I cannot say much about this method from experience, because the treatment of the simple fractures by making them compound is a later development than I have had any experience in, and I should not feel like expressing an opinion either way, but if there is ever a book written on fractures by any one in this city, and I hope there will be in the near future, I hope a distinction will be made between delayed union and non-union of broken bones. I have seen two cases of fracture of the femur that have required a year to get a good recovery. I have seen one case of fracture of the bones of the leg that required six months to get a recovery. Now those cases were not cases of non-union, simply cases of delayed union. A case of non-union would mean that there is no effort at union, that is, the limb is shrunken and atrophied and the ends of the bone atrophied, none of the thickening, induration and callus around the ends of the bone that you find where nature is making an effort at union. That, it seems to me, is rather an important point, and one that is not dwelt upon in our books on fractures to a sufficient extent.

Wiring of bones where the fault is in the nutrition, some vice in the constitution, in my experience does very little good. Wiring of bones where there is some foreign substance, as muscle or fascia, interposed between the ends is of the greatest importance; saves and gives a good limb. I do not know how you are going to distinguish those cases except by incision and examination. We all know that ununited fractures of the humerus and of the femur are more common than ununited fractures of the leg and the arm. Why it is, it is not now worth while to inquire, but that is the fact, and the few cases of ununited fracture of the humerus that I have wired have not been benefited by the operation, but as they were done ten years ago, before asepsis was as complete as now, I don't think they amount to much in this connection. Wiring of the femur in a large fleshy thigh is a good deal of an operation, and it is especially an operation for hospitals, the same as are all of these operations. They are operations that should be done by hospital surgeons, who are reasonably sure of their asepsis, and I think it would be a mistake for advice to go from this Society to the public in general that the ordinary family physician shall treat simple fractures by open incision. If the operator is reasonably sure of his asepsis it is safe, even if it does no good; if not reasonably sure, he may make a bad matter ten times worse.

Dr. Richardson: This interesting and valuable paper of Dr. Scudder contains strong convincing arguments for operating upon certain simple fractures. I should agree that a more perfect adjustment is possible in open fractures than in closed, and that the more perfect the approximation the better will be the result.

Unfortunately, however, my experience leads me to deny the absolute safety of intervention. It seems to fall to my lot to present the unfavorable aspect of operative surgery. My methods may fairly be said to be, I think, not below those of the average surgeon. My cases may have been unusually difficult, and the patients may have been of low recuperative powers. This may account for two instances of severe wound infections which I have had, — one of wiring an old fractured patella, and one of wiring a recent fracture of the thigh. In both cases the operation was imperative. The ultimate result was good, though both wounds were infected at operation. I believe, from what I have seen, that a small percentage of such wounds will be infected, and that some will prove fatal. Indeed, I have known of two fatal operations for serious injuries of the shoulder. I did not see these cases, but I have no doubt that intervention was justifiable; yet life was sacrificed to an attempt at lessening disability.

Statistics taken from hospital records are incontrovertible; taken from literature, they are generally too favorable for whatever discussion they may be quoted. I am greatly surprised by the almost invariable recovery of compound fractures. I should have said, from my recollection of cases, that there was a considerable loss of life and limb, especially after extensive comminution of bone and destruction of soft parts. Without being able to bring forward any definite statement of facts in my own cases, I should say that I have had deaths after compound fractures, and loss of limb. My results have of course been embodied in Dr. Scudder's paper.

For the elucidation of the subject every death after fracture, whether open or closed, should be considered, as I dare say they have been. In some fractures intervention is a bloody and dangerous procedure. I have once operated for dislocation of the head of the humerus with fracture at the surgical neck. The operation was a formidable one, and must have some mortality. If I am not mistaken, the two fatal cases just referred to were of this class.

In one case of my own a fracture at the junction of the upper and middle thirds of the thigh was in such bad shape, after the usual methods of reduction, that I decided to open and wire. There was extensive laceration of the soft parts, abundant hemorrhage, and a deformity almost irreducible even in the open wound. The man was past middle age, and his general condition was not especially favorable. There was extensive sepsis following the operation, and long-continued suppuration, though I was especially careful in my technique, it being my first deliberate cutting operation in simple fracture. In one old fracture of the patella I had a brief suppuration of the knee-joint. I have known a fatal septicemia to follow simple arthrotomy, and that in the hands of a painstaking operator of large experience.

I think that, in spite of its dangers, the open treatment should be used when the position remains faulty after careful attempts at reduction under ether by the

old method, provided the patient's age and general condition do not forbid.

In the large percentage of poor results it must be remembered that some of the complaints may be due to injuries to the joint and soft parts not directly implicated in the fracture. I am sure that many a case of simple sprain would be fairly classed as a poor result, — if poor result means pain, impaired functions, sensitiveness to changes of weather, rheumatism, and the like.

Assuming that in 100 cases of simple fracture all have some disability, it seems to me a fair question whether such results are not better than, say, 95 perfect recoveries and five deaths; or 90 perfect recoveries and five deaths and five total failures. Yet we cannot fairly assume that the results would be as favorable, taking all cases of all bones. Selecting only cases favorable for operation in regions remote from large joints, excluding fractures of the shoulder and of the hip, I have no doubt that the danger is slight, and that the results in faulty approximation will be better under the open than the closed methods.

In the case mentioned by Dr. Porter of the little girl with fracture of the shoulder, I must say that my inclination would have been to trust to closed methods of treatment, in spite of the x-ray demonstration. I was happy to say after his brilliant operation and success that I was wrong, and I am glad here to repeat it. I have been influenced by such cases as that of a boy with separation of the epiphysis of the shoulder whom I treated some years ago. There was a wide separation and much deformity. The shoulder-joint is now perfect. The x-ray shows such a perfect repair of the fracture that Dr. Scudder is loath to credit my diagnosis. Yet my records show a sketch, made from life, of extreme deformity. Furthermore, the humerus is two inches shorter than its fellow, a fact that supports my diagnosis and Dr. Scudder's argument in favor of intervention. I have had several cases of separated humeral epiphysis with such good functional results that I shall still feel somewhat disinclined to operate, especially when the bone is fully grown.

With reference to wiring the patella, I admit the force of the arguments given, and I have seen the splendid results of suture. Yet after what I have seen of surgery I should myself trust my broken patella to the old methods of repair rather than run even the risks of joint infection, slight though they may be.

A few disasters in the admittedly safe operations cannot but increase one's respect for the deplorable errors which it is but human to make, whether the operation be a simple cholecystotomy or a simple fracture. Such disasters may and do occur in the hands of the best of us. I simply maintain that the possibility of their occurrence should be emphasized, and that at times duty demands that well enough be let alone. The cases of fracture in which operation is advised should include only those in which it is clearly shown that the result can be only bad, or in which local and general conditions of the patient, and the experience and skill of the operator, are conspicuously good. To teach that any and every practitioner is justified, even in unsatisfactory approximation of fragments, in converting a closed into an open fracture, in my judgment, cannot but be pernicious.

Dr. Codman: I have been particularly interested in this discussion, on account of the bearing the x-rays had in bringing forward the open method of treatment. Three years ago, in a paper to the Medical Improvement Society, I made the statement that I thought the time would come when surgeons would recommend the open method in all those cases where a good result could not be expected by the regular routine treatments. I think that after three years I am inclined to be more conservative in that opinion, but I still think that the open treatment should be pursued in a certain number of cases where a good result cannot be expected. I think that is the point of view to take, rather than the question of a little better result. If a man with a fracture can expect good use of the limb and no great deformity under the old treatment, I think that treatment should be pursued; but if he must necessarily expect deformity and disuse, and there is a reasonable chance by operating of improving that condition, I think that operation should be done. In fractures about the elbow-joint it seems to me particularly important, because the old results are notoriously unfavorable. In fractures of the head of the radius, where the annular ligament is involved so that no rotation of the radius can take place, I think the fracture should be cut down on. On the whole, the conservative treatment in most cases is better because it is very difficult to get the bones into accurate position, even if you know the exact deformity. In cases of fracture of both bones of the forearm the muscles on both sides, ex tensors and flexors, tend to pull the lower fragment upwards so that there is overlapping of the bones. If the two ends are wired, the tension of those muscles still remains, and instead of pulling the ends by one another, tends to bow the arm. I have seen several skiagraphs of these cases that have been wired, and invariably instead of a perfectly straight arm you get bowing of the arm instead of overlapping fragments. Three years ago I took a skiagraph of an open fracture for Dr. Mumford, which I have brought. It shows slight overlapping fragments and the rough points. A week ago I took another skiagraph of that same patient to illustrate the change that had taken place in three years. The resulting deformity is very slight indeed. The ends of the fracture have become smoothed over so that the lines of both are nearly straight. The man has perfect use of his arm. The treatment was never modified after the original skiagraph was taken. The second skiagraph is a stellate fracture of the radius where the orbicular ligament was caught in it and the radius could not be rotated under ether. Operation should have been done in that case, but was not. There is one other point I should like to speak of. The reason for the opposition to the open treatment lies, it seems to me, more in the inefficacy of the present method of wiring bones. A wire can hold the ends of the bone together, but cannot keep the shape of the whole bone. There is always some bending of the bone as a rule. It can bend so as to form a bowing in a long bone. In Dr. Parkhill's clamp each fragment is firmly grasped so as to hold the bones in direct line as well as the ends in apposition. It seems to me the coming treatment of these cases will lie more in that direction than in the direction of wiring, which allows a certain amount of movement between the bones. The clamp holds them firmly, allows no movement; the wire still allows some.

Dr. Vietor: As I understood the reading of the paper by Dr. Scudder, there were indications in two directions for converting a closed into an open fracture. The first was when there was great difficulty in replacing the fragments, and the second, if I understood correctly, was to avoid the after-results, the affections of the joints, muscles and nerves. I have had no experience with the open method of treating these, but I had considerable observation in Dr. Van Arsdale's clinic, in New York, of the effects of treatment upon these after-results. The results in my observation have led me to the conclusion that the after-effects can in many instances be so modified and the evil effects so prevented (principally by the early use of massage) that I should question how much that factor would have weight in determining the conversion of a closed wound into an open one. The question of the adjustment of the fragments would, it seems to me, be the particular class under discussion this evening. However, I would like to ask the gentlemen who have operated and sutured the ends of the bones whether there is any material difference in the formation of callus from those cases in which the bones are treated only by external manipulation; also, whether they have any opinion as to the danger of inclusion of nerves in the callus, whether it is any less in the operative treatment than in the old method.

Dr. Elliot: In one case of fracture I have seen the nerve was included in the callus.

In summing up the sense of the meeting I think this Society would not be ready to recommend to the general practitioner to open all fractures. I doubt if this Society would follow Dr. Scudder as far as breaking up impacted fracture of the hip. I do think the sense of the meeting is that the open method is a great advance in the treatment of certain fractures. Dr. Richardson and Dr. Codman have said that even if you do see by x-ray photos that the ends are not right, there is still the difficulty of getting them together, yet that difficulty is a mechanical difficulty and we must work away at that and overcome it by better methods. With the x-ray, we can see when the thing is really wrong and is not going to come together, and when we see the head of the humerus turning directly away from its broken shaft, as in the case of the little boy just shown, we know he is not going to have a useful arm; then we balance the risk of the opening becoming septic, which is small, against the deformity of the boy's arm, and the decision is easily made in most cases; and, again, if you see with the skiagraph that the two fragments of a patella cannot be brought together, that is a clear case to wire. I agree with Dr. Richardson and the conservatives that if the skiagraphs showed that the two fragments of a patella could come properly together, I should not advise wiring, although I think it would be shorter if we did wire, yet there is a certain risk and I would not take that risk unless there was something to be gained by it. I think, as matters of practice, we should agree pretty closely as to which cases to wire. As to matters of theory, we all have our own theories and may disagree more or less.

Dr. Scudder: If we all agree that in cases of fracture which it is impossible to reduce by simple means, as evidenced by the x-ray, operative interference should be used, a much greater amount of operating in simple fractures will be the result, and the percentage of poor results as shown by statistics will be much less. We do not obtain now, as Dr. Richardson suggested, 100 per cent. of fair results; we obtain 70 per cent. of poor results. In regard to impacted hips, I believe that the sense of surgeons generally who have had experience with fractures of the hip will agree that in young adults under forty years of age it is rational treatment to break up the impaction and place the fragments in good position by means of the surcingle and gentle traction, avoiding in this treatment an everted foot and limp.

In regard to massage in the treatment of fractures, it seems to me that massage has not been used hitherto in hospital cases — where cases of fracture are seen most largely — as it should be used. It has been used in private practice to a certain extent. It has been used by a few surgeons in hospital practice, and all of these surgeons testify that the results are infinitely superior. Given a simple fracture of the patella treated in the old way the result is fair, treated by the new method with massage the result is better, treated by the open method and massage the result is infinitely better than by either of the other methods. Massage forms an important element in the treatment.

Dr. Codman referred to fractures of the forearm. If a suitable clamp can be used which will restore and preserve the alignement of the bones, we shall have a desirable mechanism for treating these fractures, because wiring will not do it.

Dr. Porter referred to the use of silver wire in fractured patella. It seems to me that the question of the material used to bring the fragments into apposition is of comparatively little importance. You may use one material or another; if fractures are brought into perfect apposition, strong bony union will result.

It should here be stated that Dr. John Homans, as the Massachusetts Hospital records show, used, some twelve years ago, absorbable material in the suture of two cases of fracture of the patella. The end results of those two cases I have recorded. The material was catgut. In one instance there was some superficial suppuration and in the other nothing abnormal occurred. The functional results were good.

Dr. Richardson referred to a loss of growth in separation of the upper epiphysis of the humerus. It may be said that Olier, and recently Poland, in his valuable book upon traumatic separations of the epiphyses, conclude from all the evidence at hand, both pathological and clinical, that separations of the epiphyses need not be absolutely reduced in order to prevent subsequent lack of growth of bone. In other words, it is not an argument for open suture that a loss of growth results if an epiphysis is not reduced.

Recent Literature.

Atlas and Abstract of the Diseases of the Larynx. By L. Gruenwald, M.D., Munich. Authorized translation. Edited by Charles P. Grayson, M.D. Philadelphia: W. B. Saunders.

A book containing in 100 pages of text an excellent didactic abstract of the anatomy, examination and diseases of the larynx, followed by 44 plates con-

taining 107 colored figures illustrative of different morbid conditions of the larynx as seen in the laryngoscope and microscopical sections is a marvel. Each figure is explained by giving a short clinical history of the case from which it is taken, and the reasons for the diagnosis. The colored figures in most cases are well chosen and bring out clearly the point to be emphasized. They are, as they should be, the more common, and not the extraordinary lesions.

All teachers of laryngology should study this book and its method of bringing the subject before the student. It is especially interesting in connection with what has recently been discussed as the case method of instruction. If used in the proper way it is a very valuable addition to a clinical course, where it is impossible to show each student a large number of representative pathological cases. The instructor need not feel at the end of the session that he has had to rely solely on description to include many of the important lesions which may be found in the larynx. The plates alone would not begin to be of the same value without the clinical histories and descriptions in connection with them. As a practical matter, it might be useful to bind the first part separately, to be used as reference notes by the student, and to mount the plates and the descriptive matter on separate cards for use in sections. The practising physician also will find the book useful to refresh his memory, or to give him a suggestion in some doubtful case.

Diet and Food. Considered in Relation to Strength and Power of Endurance, Training and Athletics. By ALEXANDER HAIG, M.A., M.D. (Oxon.), F.R.C.P., Physician to the Metropolitan Hospital and the Royal Hospital for Children and Women; author of "Uric Acid as a Factor in the Causation of Disease." Second edition, with five illustrations. Philadelphia: P. Blakiston's Son & Co. 1900.

The first edition of this book was reviewed a year ago in these columns. It is well to read the book that one may become acquainted with Dr. Haig's ideas and experimental work upon the subjects of metabolism and diet. In doing so, however, one cannot but feel that the experimental work and the deductions therefrom are too much influenced by the theory of the writer to stand as scientific data.

The Urine and the Clinical Chemistry of the Gastric Contents, the Common Poisons, and Milk. By J. W. HOLLAND, M.D., Professor of Medical Chemistry and Toxicology, Jefferson Medical College of Philadelphia. Sixth edition, revised and enlarged. Forty-one illustrations. Philadelphia: P. Blakiston's Son & Co.

This book forms a useful pocket manual for use in the laboratory. In this last edition the work has been carefully revised and brought up to date.

Nordrach at Home, or Hygienic Treatment of Consumption. Adapted to English Home Life. By Jos. J. S. LUCAS, M.R.C.S., etc., late Medical Registrar and Pathologist at North London Consumption Hospital. Bristol: J. W. Arrowsmith.

The object of this modest little duodecimo of 60 pages is to adapt the principles of the "open-air," "hygienic," "sanatorium," treatment of consumption to English home life. The directions and suggestions are sensible and to the point.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, MARCH 22, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

SUBSCRIPTION TERMS: $5.00 *per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.

THE DEVELOPMENT OF OUT-PATIENT DEPARTMENTS.

WITH the growth of the modern hospital there has gradually come into existence the so-called out-patient, or, as it is termed in other cities, the outdoor department. The name implies a certain dissociation from the hospital proper, and the facts too often bear out this lack of unity between the hospital and its out-patient departments. This is unfortunately inevitable under the existing arrangment by which the out-patient services are regarded as stepping-stones to entrance to the house, and not in themselves worthy of the most painstaking work on the part of the incumbents of the several positions. For this reason it happens that a considerable injustice is done the hospital at large, with the perfectly natural consequence that the out-patient department tends to lose its significance and be relegated to a position of minor importance and minor consideration. As a matter of fact, however, the development of this department of a great hospital should be encouraged in every way, both for the sake of the community at large and for the credit which is sure to come to the institution from the proper scientific management of its ambulatory as well as of its more acutely ill patients who are confined to bed. This fact must be more and more forced upon hospital authorities with the growth of the special branches of medicine. We have long since come to recognize that what we nowadays include under the general headings of medicine and surgery are but a part, and a relatively small part, of the conditions calling for study and treatment. The special attention now being given, for example, to the skin, throat, nose, eye, ear, children, nerves and orthopedics all demands recognition in adequate out-patient departments, in which the importance attaching to these several branches may be clearly recognized and not subordinated to other departments. These are all important branches of medicine, cases of which are ordinarily not treated in the wards of a general hospital. Those who devote their time to the study of these conditions do not look for-

ward to the distinction of being promoted to a position in the hospital proper; they are working with no ulterior motives whatever, and, therefore, their departments should be accorded a place of dignity in the hospital régime.

The justice of this attitude will no doubt be recognized in time in a substantial way through the building and equipment of proper structures for good out-patient work. Progress absolutely demands this recognition, and when it is forthcoming there can be no question that results of a positive sort will justify the necessary expenditure. Any one with the slightest experience must admit that to prosecute laborious investigations or do justice to the needs of the individual patient in the bad-smelling, overcrowded and often entirely inadequate out-patient rooms now provided for the most arduous medical service a man is ever called upon to perform, is not to be expected nor required. We welcome with satisfaction new and elaborate operating-rooms, with all the refinements which modern surgery demands, but let us not in our enthusiasm forget that other branches, and particularly the swarming out-patient departments, are fully as important from a humanitarian point of view, and have requirements of as definite a sort. It will be a step of the greatest significance in the history of hospital management when the dignity of the out-patient departments is fully established, and they are accorded the measure of esteem which their work for the community and for scientific progress demands.

OUR ATTITUDE TOWARD EPIDEMIC DISEASE.

One of the most notable effects of the research of the past twenty-five years is the tendency it has had to remove from the popular mind the dread of epidemic disease. It has been said, no doubt with some truth, that more people died from fear during the great epidemics of the Middle Ages than from the disease itself. That this tendency to panic is still present among us in modified form is shown by the condition of excitement we get into on very slender provocation, when a disease which our ancestors regarded with deserved dread appears among us. An instance in point is the undue anxiety now being manifested at Yale College over certain cases at the Sheffield Scientific School, regarding the appearance of what is feared to be small-pox. President Hadley in an address to the students so admirably sums up the proper attitude of mind in such an emergency that we quote his remarks:

"There is in some parts of the college community an excitement concerning small-pox which is not warranted by the facts. From the first the authorities have adopted the policy of making publicly known and of isolating every case which could give ground for the slightest suspicion. Only two such doubtful cases have developed. In view, however, of all the circumstances, the authorities recommend that all students should be vaccinated. This is the right remedy and the sure one. The wrong remedy is to run away. If you have not the disease in your system, vaccination will make you safe. In the very improbable contingency that any of you has the disease in his system, running away will not protect him. Least of all will the university countenance any such mistaken policy by contemplating the suspension of any part of its regular exercises.

"Every few years we have an alarm of this kind. No such alarm has ever been followed by serious consequences. I congratulate you on the superior coolness which the students of the present college generation have shown, as compared with their predecessors under similar circumstances. If you can, individually and collectively, maintain this improvement in moral courage, it will stand Yale in good stead in all the affairs of life."

This is good advice and is worthy of wider circulation than the confines of one college community. President Hadley meets the situation at every point, and we have no doubt it will have the desired effect upon the student body, which was apparently quite ready to stampede.

This event at Yale College, however, forces upon us again the desirability of properly equipped infirmaries to meet just such emergencies. With the great increase in size of educational institutions, it is becoming more and more incumbent upon the authorities to provide suitable means of isolation on the appearance of an infectious or contagious disease. We have no doubt that the present "scare" will do much toward hastening the general establishment of infirmaries, an example which Harvard University has just set.

THE CRAIG COLONY FOR EPILEPTICS.

The annual report of the Craig Colony for Epileptics was recently sent to the State Board of Charities. The colony, the site of which is a former Shaker settlement in Livingston County, has a capacity at present for about 400 inmates, but the new buildings now nearly completed and others in course of erection will increase the capacity to a total of 720 beds. There are said to be 12,000 epileptics in the State, of whom about 2,000 are not able to support themselves. The Craig Colony will be capable of accommodating all the latter when it has been fully developed. Since the institution was opened in 1892, it has received 504 patients, of whom 378 remain. The State allows the colony $250 a year for each patient, and each county allows $30 a year for each person from within its boundaries who is cared for; but the labor of the inmates themselves goes far towards paying the running expenses of the institution. Among the industries of the colony are a lumber camp, brickyard, printing-office, tailor shop, straw-matting factory, and upholstery school. The females, some of whom are employed in these, also do light outdoor work and all the house

and needle work. During the year there was an average attendance of 24 in the department of manual training. In March, after having worked seven months and completed the prescribed course of training, 10 girls were sent to the Sloyd school, where they took the grammar-school course in making drawings and models.

For maintenance, beginning October 1, 1900, the Board of Managers ask for $125,000, and for scientific observation and research $4,000. The colony authorities have systematized the work of collecting data, and hope to be able in time to offer to students of epilepsy the best facilities for carrying on their work to be found anywhere in the world. There was a Craig Colony prize for original research in epilepsy, of $100, offered last year by Dr. Frederick Peterson, of New York, President of the Board of Managers, for the best contribution to the pathology and treatment of the disease. None of the essays received was deemed sufficiently satisfactory to be awarded the prize, though three of them were given honorable mention, and Dr. Peterson has offered a $200 prize for the present year. The most important elements of success have been found to be the homelike character of the colony and the introduction of industries within the abilities of the patients to conduct. Of these, Dr. Spratling, the Medical Superintendent, says: "We have noticed that as the homes for the colonists grew smaller, the nearer in reality they are made to approach in every way an ordinary home, and the clearer grows the interest in the work of the colony, on the part of the colonists who can take part in the same, the greater is the measure of success; and while we have every reason to hope that our best work is yet to be done, we have gone far enough to see that no mistake was made when we undertook to build into the fundamental structure of the colony system the two great factors of classification and occupation."

MEDICAL NOTES.

NEWSPAPER BACTERIOLOGY. — We clip the following from a daily paper: "A bacteriol gist asked a woman who did not usually have to go on very dirty streets if he might make an experiment on one of her skirts. It was a comparatively new one, and, of course, received the daily brushing too. He found on part of the skirt-binding at the hem the following small menagerie: Two hundred thousand germs, many bearing diphtheria, pneumonia, and tonsillitis; also collections of typhoid and consumption microbes. The owner has been converted to the short skirt." We would ask how the germs were counted, and also in what way they are supposed to "bear" diphtheria, pneumonia and tonsillitis? There is some danger of overdoing the germ theory.

ANOTHER SUIT AGAINST CHRISTIAN SCIENTISTS.— We learn that a Mr. Tuttle, of Baltimore, finds cause for a suit of $20,000 against the sect of Christian Scientists. We quote his reasons as given in a daily paper. It is reported that from September 12th last until Christmas Eve, Mr. Tuttle was under the treatment by the method of "word argument," and that under it he became worse, his limbs and body swelling and gangrene resulting. On December 30th Mr. Tuttle was so near death that his family called in a regular physician, who diagnosed his case as asthma and gangrene. Cure No. 2 says: "Health is not a condition of matter, all action is of the one mind. This treatment will and must reach the right spot. Argue this silently and then realize the presence of health, and you will find that it will be so." Mr. Tuttle claims he did not find it so.

PLAGUE IN HAWAII. — It has recently been discovered that rats about sugar warehouses at Kahului have been dying in a suspicious manner. Investigation has shown after death the presence of plague bacilli, and prompt measures have, in consequence, been taken to quarantine and, if possible, disinfect the buildings. The Board of Health has in addition ordered a ratproof fence built around the whole town of Kahului, including the Hawaiian commercial store and warehouse. A patient died of plague in Kahului, February 25th. In Honolulu the situation is encouraging. There have been no new cases for several days prior to March 6th.

TWO HUNDRED AND FORTY-SEVEN CASES OF LITHOTOMY. — The *Missionary Herald* reports that Dr. D. M. B. Thom, the medical missionary of the American Board of Foreign Missions at Mardin, in Eastern Turkey, has had during the twenty-six years of his connection with the station 247 cases of lithotomy. This is a large number of cases for any one man to have had, and is explained by the fact that Mardin is the central station for a very large region where stone in the bladder is common. The question naturally suggests itself whether Dr. Thom practises the more modern methods of crushing.

A CONDEMNATION OF WATER GAS. — Dr. J. S. Haldane has recently read a paper on the "Use of Carburetted Water Gas for Domestic Lighting Purposes," before the Society of Medical Officers of Health, of London. His statistics should be conclusive as to the vastly greater danger of water gas as compared with coal gas, a fact which Boston has had ample occasion to realize.

HOME FOR CONSUMPTIVES IN DENVER. — It is reported that arrangements are being made to establish a National Baptists' Home for Consumptives in Denver, Col. This phase of medical charity, from all appearances, is not likely to be neglected in the future.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, March 21, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 64, scarlatina 31, measles 50, typhoid fever 6.

INFLUENZA IN BOSTON. — During the week ending March 17th, 21 additional deaths from influenza were reported, which makes the total number 31 for two weeks. The number of deaths in Boston last week was 341, as against 195 the corresponding week last year. This was the largest weekly death list since January 18, 1890, when the number was 416; the next largest being 357, for January 11th, and 348, January 4, 1890. A considerable proportion of the deaths have occurred in almshouses. That the disease is no respecter of persons is shown, however, by the fact that the nurses registered at the Directory have all been called into service. It is probable that many of the cases regarded as uncomplicated influenza are due to a mixed infection rather than to the organism now recognized as specific for the disease.

SMALL-POX AT SHEFFIELD SCIENTIFIC SCHOOL, NEW HAVEN. — Considerable alarm is still manifested over the appearance of small-pox at the Sheffield Scientific School. A number of students have left New Haven temporarily until danger of contagion is past. There appears to be some difference of opinion among members of the faculty as to the advisability of temporarily closing the school.

"DR." TRUTH'S "ABSENT TREATMENT."— "Divine Healer" Francis Truth seems so far to have allied himself with the sect of Christian Science as to be an ardent believer in their method of so-called "absent treatment." In fact, so ardent a devotee of this method has he become that he is reported to have realized in the neighborhood of $30,000 a week from its practice.

THE MERCHANTS' CLUB'S DINNER.— The Merchants' Club of Boston entertained representatives of the medical profession at their monthly dinner at the Algonquin Club on Tuesday, and listened to remarks from Drs. Councilman, Bowditch, C. J. Blake, Whittier and M. H. Richardson.

A NEW ENGLAND CENTENARIAN. — Mrs. Emyle Hyde Grinnell, of Colchester, Vt., has died at the age of one hundred and three years and eight months. Longevity is said to be a characteristic of her family.

NEW YORK.

HOSPITALS FOR TUBERCULOSIS.— The Senate Finance Committee has recommended the appropriation of $150,000 for the establishment of a State Hospital in the Adirondacks for the treatment of incipient pulmonary tuberculosis. At a meeting of physicians and officers representing the hospitals in the Boroughs of Manhattan and the Bronx, and also some of the suburban hospitals, which was held recently in the library of the Charity Organization Society, a resolution was unanimously adopted urging the passage of the bill which provides for such an institution. In the discussion on the resolution, it was pointed out that it is becoming increasingly difficult for tuberculosis patients to secure admission into the existing hospitals, and the State is confronted with the fact that there are 14,000 new cases of the disease each year, with practically no hospital accommodations for them. The percentage of those who are cured, even under the present unfavorable conditions of treatment, is most encouraging, and indicates what might be done by hospitals in which tuberculosis patients could be adequately treated. On March 14th Dr. Henry, of New York, introduced in the Legislature a bill for the establishment of a tuberculosis hospital in or near New York City. The bill provides that the hospital shall be in charge of the Department of Health and that the corporation counsel, upon a written request from the Department, shall take the necessary steps to secure a site; while the controller is directed to issue corporate stock to the amount of $100,000 to pay for a site and $250,000 for construction.

A SOLOMON ON THE BENCH.— One day last week a physician was called into the Supreme Court, Brooklyn, to decide between a husband and wife as to which should have the custody of their eleven-months-old baby. The mother had applied to Justice Jenks, on *habeas corpus* proceedings, for the custody of the child, which was in the custody of the father, and her counsel contended that as it had not yet been weaned it would be injurious to separate it from its mother. The judge, after puzzling over the situation for a moment, directed an officer to go around among the courts and see if he could find a physician. The messenger returned with Dr. Wilson Small, and when his advice had been asked the court delivered the following wise opinion: "Having consulted with a physician indifferent to either party, I shall abide by his opinion. He believes that it would be injurious to the child to take it away from its mother at this time. I shall, therefore, deliver the child to the mother as the custodian appointed by the court, and she shall be responsible for it to the court until the matter is decided."

LEPERS.— One of the most interesting themes that will be considered at the Ecumenical Missionary Conference in New York, April 21st to May 1st, relates to the work done for lepers in various parts of the world. It is to be specially reported on by Wellesley C. Bailey, Secretary and Superintendent of the Mission to Lepers in India and the East, and by Miss Mary Reed, a missionary to the lepers. The Mission to Lepers in India begun in 1874 found an important sphere of work among this large and afflicted class.

A CENTENARIAN.— On St. Patrick's Day Richard Monahan, a native of Dublin, who resides in the Borough of Richmond, celebrated the one-hundredth anniversary of his birth. He came to America when a boy, and is proud of having served with General Scott in the Indian war in Florida. On the same day another New Yorker, a female, died within three months of the age of one hundred.

CONTAGIOUS PNEUMONIA. — In New York four children in one family recently died of pneumonia. In a single household in a rural settlement in Sussex County, N. J., near Port Jervis, three members of the family have died of pneumonia, and three others are reported as seriously ill with the disease.

Defeat of the Henry Bill.— March 15th the Henry Bill for the regulation of the hours of drug clerks was defeated in the Senate. The vote was twenty-one yeas to twenty nays, which is an unconstitutional majority.

Miscellany.

THE IMPORTANCE OF RESTRICTING MEASLES.

Attention was directed last week to the demand for a measles ward in connection with the Contagious Department of the Boston City Hospital. Apropos of this appeal, we notice that the secretary of the Connecticut Board of Health, in the *Monthly Bulletin* of the Board for February, emphasizes the prevalence of measles as a disease, its frequent sequelæ and its important effect upon mortality records in the following judicious paragraphs:

There is an increasing prevalence of the malady since the year began. It is a serious error and very widespread in the public mind that measles is a comparatively trivial disorder and the precautions to prevent its spread are unimportant and not worth the trouble. To show the fallacy of this belief and how dangerous it is to act upon it, it is only necessary to refer to the published reports of vital statistics.

In the last four years there were only 239 deaths from scarlet fever in Connecticut, while there were 427 deaths from measles. Yet both diseases have been prevalent through the State all that time.

In the report of the Registrar-General of England for the decade 1888 to 1897 the deaths from scarlet fever numbered 57,226, while those from measles were 128,043, more than double the mortality of scarlet fever.

The report of the Registrar-General of Ireland for the same period is similar — scarlet fever 5,272, measles 8,842. It is true, the direct mortality from measles is not large in proportion to the whole number ill with it, but it has been observed for generations that following an epidemic of measles there is always an increased mortality from pneumonia, bronchitis and consumption. Is it a trivial disease that destroys more lives in ten consecutive years throughout both England and Ireland than the united victims of scarlet fever and diphtheria? Deaths from measles in those countries were 136,885. Deaths from scarlet fever and diphtheria together in England and Ireland during the same ten years were 135,681.

From these facts it must be conceded that measles is not a trival malady, but that its importance as a factor in public health ranks well up among the most dangerous diseases.

Is it a preventable disease? Yes. Inasmuch as its continued prevalence depends upon contagion it is preventable. But it is not so easily prevented as some other diseases. Its prevention and restriction depend much upon the ready and willing co-operation of parents and physicians.

A TRIBUTE TO DR. W. H. H. HASTINGS.

The physicians comprising the staff of the Boston Dispensary wish to express their sense of loss in the death of their superintendent, Dr. William H. H. Hastings.

The changes in the staff have been so many and Dr. Hasting's incumbency so long, that the superintendent became the senior of almost all the staff and acquired an almost paternal relation towards the majority of us. Nearly all of us have received our original appointments at his hands, and all of us have felt that our work was watched and weighed by him. In his relation of superintendent, he has always seemed to aid and encourage each one. New ideas and new methods have always received his careful consideration, and it has been his aim that the Dispensary should profit by advances in medicine and by the enthusiasm of its younger physicians. Honesty, faithfulness, self-abnegation and courtesy have always marked his dealings with us.

We believe that our work has been better done for his example and it shall be our aim to preserve the spirit which he, by example rather than by precept, has inculcated, so long as we continue to work here, and to hand on to our successors the traditions which he has helped to establish.

Abner Post,
Edward O. Otis,
Robert W. Greenleaf,
George S. Whiteside,
Henry Jackson,
Committee of the Staff of the Boston Dispensary.

HYDROPHOBIA IN ATHENS.

It is interesting, says the *Medical Press*, to peruse the statistics of the Pasteur Institute in Athens, where from August, 1894, to the end of 1897 no fewer than 997 persons underwent the anti-rabic treatment. Among the whole number so treated there were only two deaths, or a percentage of .25. In five persons, however, the disease developed within fifteen days after the last inoculation. Among those not treated at the institute there were 40 persons who died of hydrophobia; in 27 of these the incubation period varied from twenty to one hundred and twenty days; in two, from five to six months; in one, from six to seven months, and in one beyond a year. These figures undeniably show a preponderance of results in favor of Pasteur's method. Of course it might be argued that many of the cases treated by this method would probably never develop hydrophobia in any case, but we do not regard such a contention as a reason for failure to submit to the only method of the prevention of the disease which science has been able to elaborate.

Correspondence.

THIRTEENTH INTERNATIONAL MEDICAL CONGRESS.

Baltimore, Md., March 12, 1900.

Mr. Editor: — I have just read in your issue of March 8th "Spectator's" letter from Paris. Of course such a diatribe as this against France and everything French can have no influence in dissuading American physicians from attending the International Medical Congress because it happens to meet in Paris. I only want to correct one possible misunderstanding; namely, that the Congress is not to be held "in a light shell of a building of great size, marked: *Palais des Congrès*," but on the contrary, the general sessions are to sit in the great amphitheatre of the Sorbonne and

the sectional gatherings in other rooms of this University, at the Collège de France, the Faculté de Médecine, the Hôpital Necker, the Hôtel Dieu, and similiar convenient and appropriate places.

Very truly yours,

HENRY BARTON JACOBS, M.D.,
Secretary American National Committee.

[Any reader is naturally at liberty to give as much or as little weight as he sees fit to our correspondent's ("Spectator's") statements. Some of these are statements of fact and some are statements of opinion. His knowledge of Paris cannot be questioned. His Paris in August we have ourselves involuntarily experienced on more than one occasion. Those who attend the Congress will do well, instead of chasing the twenty-nine sections, to sit quietly in the Sorbonne and absorb the beauties of Puvis de Chavannes's noble mural painting, whilst some of the sections come round to them. — ED.]

THE OLD RÉGIME HAD MERITS.

BOSTON, March 15, 1900.

MR. EDITOR: — The writer of your editorial on "Medical Teaching," in to-day's issue of the JOURNAL, misconstrues my letter of the same issue. I do not "defend the old régime," for I am in entire accord with the present movement. I merely call attention to the fact that the old lectures were not the useless, futile things they were distinctly stated to have been by President Eliot and Dr. Councilman.

Very truly yours,

J. G. MUMFORD, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MARCH 10, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Scarlet fever.	Measles.
New York	3,654,594	1773	607	11.50	26.25	2.65	.95	1.50
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	—	—	—	—	—	—	—
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	280	72	17.64	28.48	3.24	2.16	—
Baltimore	506,389	212	69	14.57	19.74	2.35	.47	—
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	—	—	—	—	—	—	—
Washington	277,000	99	24	16.16	7.07	4.04	—	1.01
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	86	35	62.64	48 72	1.16	2 32	10.44
Nashville	87,754	36	11	19.39	30.47	2.77	—	2.77
Charleston	65,165	29	8	10.35	10.35	—	—	—
Worcester	111,732	25	6	8.00	8.00	4.00	—	—
Fall River	103,142	39	21	15.78	26.31	—	—	—
Cambridge	92,520	37	7	27.02	27.02	8.10	—	—
Lowell	90,114	42	17	14.28	26.18	—	—	—
New Bedford	70,511	18	8	33.33	27.77	—	11.11	—
Lynn	68 218	24	5	8.30	20.75	—	—	—
Somerville	64,394	29	5	20 64	30.96	—	10.32	—
Lawrence	59,072	18	7	11.11	22 22	5.55	—	—
Springfield	58,266	24	5	20.75	4.15	4.15	—	—
Holyoke	44,510	14	4	—	—	—	—	—
Brockton	38,759	—	—	—	—	—	—	—
Salem	37,723	23	4	4 35	43.47	—	—	—
Malden	36,421	9	1	—	33.33	—	—	—
Chelsea	34,235	9	2	11.11	11.11	11.11	—	—
Haverhill	32,651	14	4	14 28	14.28	—	—	—
Gloucester	31,428	4	—	—	—	—	—	—
Fitchburg	30,523	6	2	16.66	33.33	—	—	16.66
Newton	30,461	9	1	11.11	44 44	—	—	—
Taunton	28,527	9	3	22.22	44 44	—	—	—
Everett	28,102	13	2	19.34	19.34	—	—	—
Quincy	24,578	10	—	—	40.00	—	—	—
Pittsfield	23,471	—	—	—	—	—	—	—
Waltham	22,791	12	3	16.66	8.33	8.33	—	—
North Adams	21,583	8	2	25.00	12.50	—	—	—
Chicopee	18,316	7	2	—	—	—	—	—
Medford	17,190	—	—	—	—	—	—	—
Newburyport	15,636	9	3	—	11.11	—	—	—
Melrose	14,721	5	1	20.00	20.00	—	—	—

Deaths reported 2,947; under five years of age 951; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 527, acute lung diseases 801, consumption 263, diphtheria and croup 94, measles 44, scarlet fever 30, whooping-cough 26, diarrheal diseases 19, cerebrospinal meningitis 18, erysipelas 17, typhoid fever 16.

From whooping-cough New York 18, Providence 3, Boston 2, Washington, Nashville and New Bedford 1 each. From diarrheal diseases New York 10, Fall River 3, Baltimore 2, Boston, Washington, Cambridge and Springfield 1 each. From cerebrospinal meningitis New York 6, Boston 5, Providence, Worcester, Lowell, New Bedford, Springfield, Haverhill and Everett 1 each. From erysipelas New York 15, Baltimore and Providence 1 each. From typhoid fever New York 6, Providence 2, Boston, Baltimore, Washington, Cambridge and Springfield 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,226, for the week ending March 3d, the death-rate was 21.2. Deaths reported 4,729: acute diseases of the respiratory organs (London) 380, whooping-cough 121, measles 115, diphtheria 75, fever 40, scarlet fever 32, diarrhea 32, small-pox (West Ham) 1.

The death-rates ranged from 14.8 in Gateshead to 31.2 in Blackburn: Birmingham 25.1, Bradford 21.3, Cardiff 17.7, Croydon 15 9, Huddersfield 20.0, Hull 19.4, Leeds 21.0, Liverpool 31.2, London 19.0, Manchester 28.0, Newcastle-on-Tyne 19.8, Nottingham 16.8, Portsmouth 18.5, Sheffield 22.5, Sunderland 18.4, Swansea 17.3.

METEOROLOGICAL RECORD

For the week ending March 10th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		W'th'r.*		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S...4	30.21	36	46	25	62	46	54	S.W.	S.W.	14	8	O.	F.	
M...5	30.44	29	39	19	74	57	70	N.	N.E.	12	6	O.	C.	.03
T...6	30.20	28	37	19	93	100	96	S.E.	W.	10	8	N.	R.	
W...7	30.17	36	44	28	60	53	56	W.	W.	26	13	F.	C.	.28
T... 8	30 54	32	40	23	63	60	62	N.W.	S.E.	14	10	C.	C.	.05
F... 9	30.19	39	51	27	58	84	71	S.W.	S.	6	13	C.	C.	
S...10	29.68	42	52	32	80	56	68	W.	W.	9	13	C.	C.	
☞	30.20		44	25			69							.36

* O, cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☞ Mean for week.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MARCH 17, 1900.

B. L. WRIGHT, assistant surgeon, commissioned assistant surgeon from May 13, 1899.

R. W. PLUMMER, assistant surgeon, commissioned assistant surgeon from June 17, 1899.

O. M. EAKINS, assistant surgeon, commissioned assistant surgeon from October 31, 1899.

H. E. ODELL, assistant surgeon, commissioned assistant surgeon from November 8, 1899.

J. S. TAYLOR, assistant surgeon, commissioned assistant surgeon from November 8, 1899.

E. DAVIS, assistant surgeon, commissioned assistant surgeon from November 21, 1899.

O. DIEHL, surgeon, detached from the Naval Recruiting Rendezvous, Philadelphia, Pa., and ordered home and to wait orders.

C. H. T. LOWNDES, passed assistant surgeon, ordered to the Naval Academy, March 14th.

F. E. MCCULLOUGH, assistant surgeon, order of March 8th, detaching from the "Nero" and ordering to the "Independence," revoked; detached from the "Nero" and ordered to the "Philadelphia" immediately.

T. M. LIPPITT, assistant surgeon, detached from the "Baltimore" and ordered to such other duty on the Asiatic Station as the commander in chief may assign

F. WOOD, pharmacist, detached from the Washington Navy Yard and ordered to be examined March 15th, for retirement, and thence home and to wait orders.

C. F. STOKES, passed assistant surgeon, detached from the Naval Hospital, New York, March 24th, and ordered to the "Buffalo," April 2d.

B. R. WARD, passed assistant surgeon, detached from the "Independence" and ordered to the Naval Hospital, Mare Island, Cal.

C. D. BROWNELL, passed assistant surgeon, detached from the "Solace" and ordered home and to wait orders.

R. SPEAR, assistant surgeon, detached from the "Constellation" and ordered to the Naval Hospital, New York.

O. M. EAKINS, assistant surgeon, detached from the Naval Academy, March 24th, and ordered to the "Buffalo," April 2d.

J. T. KENNEDY, assistant surgeon, ordered to the "Independence."

J. STEPP, assistant surgeon, detached from the Naval Hospital, Mare Island, Cal., and ordered to the "Solace."

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING MARCH 15, 1900.

GEDDINGS, H. D., passed assistant surgeon. To assume temporary charge of the hygienic laboratory. March 13, 1900.

YOUNG, G. B., passed assistant surgeon. Granted leave of absence for four days from March 20th. March 13, 1900.

CUMMING, H. S., passed assistant surgeon. To proceed to Millboro, Va., for special temporary duty; then to rejoin station. March 12, 1900. Granted four days' extension of leave of absence. March 12, 1900. Four days' extension of leave of absence granted by Bureau letter of March 12th, revoked. March 13, 1900.

WILLE, C. W., assistant surgeon. Upon being relieved from duty at Boston, Mass., to proceed to the Cape Charles Quarantine Station and report to the medical officer in command for duty and assignment to quarters. March 9, 1900.

GOLDSBOROUGH, B. W., acting assistant surgeon. Granted leave of absence for fifteen days from March 15th. March 9, 1900.

SOUTHARD, F. A., hospital steward. Relieved from duty at the port of New York, N. Y., and directed to proceed to Baltimore, Md., and report to the medical officer in command for duty and assignment to quarters. March 14, 1900.

WARHANIK, C. A., hospital steward. Upon being relieved from duty at Baltimore, Md., to proceed to New York, N. Y., and report to the medical officer in command for duty and assignment to quarters. March 14, 1900.

SOCIETY NOTICES.

SUFFOLK DISTRICT MEDICAL SOCIETY.— The Section for Obstetrics and Diseases of Women will meet at 19 Boylston Place, Wednesday, March 28, 1900, at 8 P. M.

Papers: Dr. E. S. Boland, "Immediate Repair of Perineal Tears."

Dr. F. H. Davenport: "The Mortality of Hysterectomy for Fibroids."

Drs. Malcolm Storer and M. T. Thurber: "Repeated Tubal Pregnancy, with Operation in Each Case."

R. A. KINGMAN, M.D., *Chairman.*
C. H. HARE, M.D., *Secretary,*
285 Marlborough Street.

AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION. — The Executive Committee finds that The Jefferson, the most desirable hotel in Richmond for the purposes of the Association, is engaged for the week May 7th to 12th. The Council has decided, therefore, to again postpone the meeting until May 22d, 23d, 24th, 25th.

Later and fuller notice will be mailed to members.

C. B. BURR, M.D., *Secretary.*

CONGRESS AGAINST TUBERCULOSIS. — By desire of the Neapolitan branch of the "League against Tuberculosis," this Congress, of which her Majesty the Queen of Italy has been graciously pleased to become the patroness, will meet at Naples on April 25-28, 1900, under the presidency of his Excellency Minister Baccelli. The General Committee, presided over by Senator Prof. de Renzi, and of which Prof. A. Rubino is the secretary, superintends the arrangements of the Congress, the aim of whose labors is the same as that first set on foot at the Congress of Berlin. It will be divided into the following sections, each of which has a separate committee of management: (1) Etiology and Prophylaxy; (2) Clinical Pathology; (3) Therapeutics; (4) Sanatoria. In this Congress are entitled to take part: Physicians, naturalists, engineers, as well as representatives of the social and philanthropic sciences. The subscription for each person is twenty francs (Italian) and entitles to the members ticket and badge of the Congress, as well as to the reduced fares on the Italian railways and steamboats, to the transactions of the Congress, and all publications connected with the same, as well as the free entrance to the museums, Pompeii, Herculaneum, etc.

Ladies connected with members of the Congress can, on payment of the same sum of twenty francs, take part in the Congress.

During the Congress numerous festivities will take place: Reception by the Municipality of Naples, gala performance at the theatre of San Carlo, excursions, with luncheons, to Pompeii, Sorrento and Capri, excursion to Palermo and visit to the sanatorium "Hygeia," founded by Commendatore Florio.

The exact programme of these festivities will be communicated to the members of the Congress with the least possible delay. The applications as well as the entrance money are to be sent to the secretary's office of the General Committee, I. Clinica medica della R. Università di Napoli (*Ospedale Clinico*).

WARREN TRIENNIAL PRIZE.

The Warren Triennial Prize was founded by the late Dr. J. Mason Warren in memory of his father, and his will provides that the accumulated interest of the fund shall be awarded every three years to the best dissertation, considered worthy of a premium, on some subject in physiology, surgery or pathological anatomy; the arbitrators being the physicians and surgeons of the Massachusetts General Hospital.

The subject for competition for the year 1901 is some subject in physiology, surgery or pathology.

Dissertations must be legibly written and must be suitably bound so as to be easily handled. The name of the writer must be enclosed in a sealed envelope, on which must be written a motto corresponding with one on the accompanying dissertation.

Any clew given by the dissertation, or any action on the part of the writer which reveals his name before the award of the prize, will disqualify him from receiving the same.

The amount of the prize for the year 1901 will be $500.

In case no dissertation is considered sufficiently meritorious, no award will be made. A high value will be placed on original work.

HERBERT B. HOWARD,
Resident Physician, Massachusetts General Hospital.

MUTTER COURSE OF LECTURES ON SURGICAL PATHOLOGY, COLLEGE OF PHYSICIANS OF PHILADELPHIA.

The course of Mütter lectures for 1899-1900 will be delivered in the Hall of the Mütter Museum of the College of Physicians, northeast corner of 13th and Locust Streets, Philadelphia, by Dr. John B. Roberts, on Tuesdays and Fridays, from March 27th to April 27th, at 8.30 P. M.

Subject: "The Surgical Treatment of Congenital and Pathological Disfigurements of the Face."

Lecture I, March 27th. — "A Brief Review of the Development of Reparative or Plastic Surgery."

Lecture II, March 30th. — "A Rapid Survey of the Anatomy (Constructive, Regional and Artistic) of the Human Face."

Lecture III, April 3d. — "Characteristic Features of the Operative Surgery of the Face. The Fundamental Principles of Successful Plastic Operations."

Lecture IV, April 6th. — "The Removal of Disfigurements due to Pigments, Cicatricial Distortions, Fistules, Congenital Fissures and Errors of Development, Tumors and Skin Diseases."

Lecture V, April 10th. — "The Correction of Deformities of the Mouth and Lips."

Lecture VI, April 13th. — "The Reconstruction of the Lips and Cheeks."

Lecture VII, April 17th. — "The Correction of Deformed Noses."

Lecture VIII, April 20th. — "The Construction of New Noses. (Total and Partial Rhinoplasty.)"

Lecture IX, April 24th. — "The Operative Treatment of Deformed or Deficient Ears."

Lecture X, April 27th. — "The Cosmetic Surgery of the Eyes."

JOHN H. BRINTON, M.D., *Chairman,*
GEORGE MCCLELLAN, M.D.,
FREDERICK A. PACKARD, M.D.,
Committee on Mütter Museum.

RECENT DEATHS.

ARTHUR A. BEEBE, M.D., died Sunday, March 16th, at his home in Boston, at the age of twenty-eight. He was graduated from Harvard College in the Class of '93, subsequently received his degree of M.D. at the Harvard Medical School and had within a few weeks completed his service as surgical house officer at the Massachusetts General Hospital.

THOMAS H. BAILEY, M.D., of New York, died on March 17th, in the fifty-second year of his age. He was a son of the late Dr. Joseph H. Bailey, U. S. A., and was graduated from Bellevue Hospital Medical College in 1869.

SAMUEL H. PENNINGTON, M.D., of Newark, N. J., the oldest living graduate of Princeton University, died on March 14th. He was born in Newark in 1806 and graduated from Princeton in 1825. He was for many years a trustee of the University and was at one time president of the New Jersey State Medical Society.

WILLIAM MACNEIL WHISTLER, M.D., a brother of the well-known artist, died in London a short time ago. He was a surgeon in the Confederate Army during the Civil War.

Original Articles.

TYPHOID SPINE.[1]

BY R. W. LOVETT, M.D.,
Surgeon to the Boston City Hospital,
AND
CHAS. F. WITHINGTON, M.D.,
Physician to the Boston City Hospital.

THE name "typhoid spine" was given by Gibney to a condition at times following enteric fever, which was characterized by great pain and sensitiveness of part of the vertebral column, simulating rather closely Pott's disease. Gibney described four cases and subsequently a fifth, but only the first three can be accepted as authentic instances of this condition. Gibney believed it to be due to a perispondylitis, meaning an acute inflammation of the periosteum and the fibrous structures which hold the spine together. Osler analyzed Gibney's paper, and reported three cases of his own under the title, "On the Neurosis Following Enteric Fever, Known as the Typhoid Spine." He was rather inclined to regard the condition as a neurosis, in some cases at least, on the ground that prolonged periostitis lasting for weeks and months and not coming to suppuration was unlikely. He may be quoted as follows: "While, of course, it would be very illogical to assume that all of the instances are due to the same cause, yet I cannot help feeling that many of them are examples simply of the painful neurosis formerly known as spinal irritation." The three cases observed by him he was inclined to regard as neurotic in character. Quincke reported two cases, like the others in every respect, under the name of "spondylitis typhosa." As to its nature he was inclined to believe that Osler was partly right, although he thought that Gibney's view might have a correct basis. Another case was reported by Könitzer, where a blacksmith, twenty-five years old, four or five months after the beginning of a severe typhoid, was seized with very severe pain in the back, which kept him in the hospital some two months. The case presented nervous phenomena, but no unusual symptoms, and followed the general type of the cases of Quincke and Gibney.

These apparently are all the contributions of literature on the subject. The nine cases (three of Gibney, three of Osler, two of Quincke and one of Könitzer) reported are all much alike and present the following characteristics, so far as one can generalize from so few cases. The patients affected are young adults (males in all reported cases). The spinal affection occurs late in the convalescence, or after it is apparently ended, often after the patient has returned to work. It may follow an accident or may occur spontaneously. It affects the lower dorsal or lumbar region. It is attended by curious nervous symptoms, such as paresthesia, variation in surface reflexes, etc. Pain is excessive and rigidity of the spinal column is due more to voluntary muscular contraction, holding the spine steady, than to the involuntary muscular spasm, as in tuberculous spondylitis. No system of treatment has been formulated. The prognosis is favorable.

The case to be reported is of interest in connection with previously reported cases for the following reasons: Deformity resulted, which must have been due to a destructive osteomyelitis; nervous phenomena of two kinds were present: first, certain sigmata of hysteria; second, phenomena of another kind, showing pressure. Taken altogether, it would seem that in this case, at least, the lesion was a mild, self-limited osteomyelitis of the bodies of the vertebræ, which for some reason is attended with nervous symptoms of a character simulating hysteria, yet having some basis in pressure phenomena.

The patient is a physician, aged thirty-five years; tall, rather spare, with good muscular development, and at one time a teacher of physical training. He belongs to a family of rather exceptional longevity and vigor, and is one of ten children, all of whom, with the exception of three who died in infancy, are, with the parents, living and well. One aunt on the father's side died of epithelioma of the breast, and another of sarcoma of the humerus. An aunt on the maternal side died at twenty-five of pulmonary tuberculosis, this being the only instance of that disease in the family. The patient has had no illnesses except pneumonia in 1886 and dysentery in 1891. He had never had any trouble with his back. He was assistant surgeon of United States Volunteers during the Spanish War and served in the Cuban campaign. In camp before Santiago he was taken sick July 17, 1898, and had a continuous high temperature with watery diarrhea for two weeks, and an intermittent temperature for two weeks more, during which the bowels were more regular. The diagnosis of the division hospital was tropical malaria. On August 14th he left Santiago for Montauk, being at the time very weak, but free from fever. After remaining there in the same condition for five days, he came to his home in Central Massachusetts, arriving there on August 26th. The next day he had a sharp chill, but it was not repeated and he began rapidly to gain strength.

About the 25th of September he began to notice lameness in the lumbar region, and October 6th, after getting very tired, had severe cramps in the same region, which required a hypodermic injection of morphia. He remained in bed for three days, then rapidly improved and began medical practice. He continued to feel perfectly well till November 26th, when he had a slight chill. That day he came to Boston. The next day the cramps in the back returned and grew rapidly worse. He remained in bed at a hotel till December 3d, when he entered the City Hospital.

The physical examination at his entrance was for the most part negative. Though there had been occasional chills, the temperature was normal. The abdomen was tense, tympanitic and slightly tender; no rose spots. A search for plasmodia was made on December 3d, and again on December 13th and 30th, but with negative results. He complained chiefly of severe pain in the lumbar region, coming on in spasms of great intensity. These were much aggravated by getting out of bed, which, as he was unable to use the bed-pan, he had to do daily. These dorsal pains were very excruciating and several times required the use of morphia. The effect of massage was to aggravate the pain, partly because the treatment involved his turning upon his side, which was likely to start up the cramps. Faradism

[1] Read at the meeting of the Boston Society for Medical Improvement, December 1, 1898.

also proved useless or injurious, and day after day the pain continued to be distressing, with some loss of sleep. Blood examination soon after entrance showed 7,450 whites, and on December 30th a characteristic typhoid serum reaction was present, clumping occurring in two minutes. Throughout the month of January the pain was still complained of; at times, especially toward the end of the month, the patient thought it was less intense when at rest, but all attempts to sit up in bed or move at all caused great distress.

Examination, January 30th, showed on the outer surface of both thighs, extending from trochanter to knee, an area of diminished sensation to pain and touch, most marked on the right leg. Patellar reflexes lively; plantar and abdominal, normal; cremasteric, sluggish. The spines of the lower dorsal and the upper lumbar vertebræ were tender to pressure. The muscles of the loin were rigid. Three or four days later there was noted a tenderness over the posterior part of the ilium. No swelling to be seen. Considerable muscular spasm. No prominence of any vertebral spines at this time. On being made to stand, patient cannot hold himself erect, and after standing a minute the pain in the back becomes worse. On sitting in an armchair he rests his weight as far as possible on the elbows. Cannot bear to sit up without such support. After an hour in this position the pain becomes severe but passes off when he goes back to bed. He contrives to sit up altogether about two hours per day. No rectal or vesical symptoms. Eats and sleeps well.

February 5th. Patient walks about a little with a cane, but moves with great slowness and caution. Rises with much difficulty from the chair, and gets his balance slowly and carefully. In the course of the next four days he could walk the length of the corridor with two crutches, showing some gain in the ability to use the lower extremities. About this time a distinct projection of the spines corresponding to the eleventh and twelfth dorsal and first lumbar vertebræ was for the first time noticed. There was also noted a considerable tenderness over the transverse processes of the second lumbar vertebra, worse on the left side. Meantime the patient continued to walk slowly and stiffly with crutches daily. He felt more comfortable when standing or lying than when in a chair. After a day or two he himself discovered the "knuckle" and was much alarmed thereat.

The patient was first seen by Dr. Lovett in consultation with Dr. Withington February 11, 1899. At that time he was in bed most of the time and was able to go about with crutches. There was a well-marked prominence of the spinous processes in the lower dorsal and upper lumbar region, involving apparently two or three vertebræ; the spine was almost absolutely rigid in passive and active movements; getting from the bed into the erect position was accompanied by intense spasm of the spinal muscles and very severe pain, more so than in Pott's disease, even of a severe type; the knee-jerks were moderately increased and motion in the legs was apparently good. A provisional diagnosis of "typhoid spine" was made. As movement was evidently attended by great irritation and pain, it was decided to put on a plaster jacket, which was applied on February 17th, with the patient lying prone in a hammock. Less relief followed than is customary after the application of the jacket to patients with Pott's disease, although the patient was somewhat better.

As the patient was evidently hospitalized, he left the hospital on February 24th and went to a hotel. At this time, although movement was attended with less pain than without the jacket, he was still very uncomfortable and the erect position was painful. He walked fairly well with crutches.

The temperature chart, which was carefully kept during his hospital residence, showed for the first two weeks a slight irregularity with elevations not exceeding 99.6°. About December 17th a more marked febrile movement began, accompanied by slight chills on four occasions, December 22d, 23d, 28th and January 4th. As already remarked, repeated examination failed to reveal the plasmodia. The fever during the twenty-five days following December 17th ranged mostly from 100° to 102°, only three times exceeding the latter figure. After January 10th the curve returned to about the same character as during the first two weeks, only once reaching as high as 100°, but showing a constant diurnal variation from about 98° in the mornings to 98¾° or 99° in the evenings. After he left the hospital the evening temperature, which was taken at intervals, was always found to be normal.

On March 1st the plaster jacket was opened, a strip cut away to allow it to be brought tighter and it was fastened with straps, but with this he was less comfortable than with the fixed jacket, and on March 8th a second jacket was put on, again in the hammock position. This jacket was purposely put on very tight and each turn of the bandage pulled with all reasonable force. Improvement in the pain immediately followed and he was able to be about more, although able to do very little. As soon as he began to be freer from pain it was noticed that the power in his legs was poor and that he was evidently suffering from some muscular impairment of motion. His knee-jerks were decidedly increased and he had some ankle clonus. At this time another test of the blood gave a positive Widal reaction.

On March 10th he was seen by Dr. Withington in consultation with Dr. Lovett. He was found to be walking with crutches a little better than when he left the hospital, but the getting out of bed and assuming an erect attitude was attended with great difficulty, apparently not so much from pain as from loss of power. When lying recumbent he raised the legs from the bed with great difficulty, the paresis in each being equal. Muscular sense was good. Tactile sensation good, except in the areas on outside of the thighs before noted. No impairment of sphincters. No atrophy. Patellar reflex increased, slight ankle clonus. No rigidity or contractions of legs. Appetite and other bodily functions good. Patient cheerful and hopeful.

On March 11th he was seen by Dr. Morton Prince in consultation with Dr. Lovett. Examination showed very much increased knee-jerks, slight ankle clonus, two anesthetic patches, one on the outside of each thigh, and impaired muscular power in the movements of the legs. In addition to this there was a greater disability in getting about, rising from a chair, etc., than seemed to be explained by the impairment of muscular power. According to Dr. Prince the signs found were confusing, somewhat contradictory, and not characteristic of any type of spinal lesion; at the

same time the anesthetic patches were constant and definite, and Dr. Prince felt that there had been compression present, which accounted for part of the symptoms, but that the present condition as a whole, apart from this, was rather to be classed as hysterical. The patient in other respects although, not a hysterical man, showed the effect of long confinement in bed and severe pain in mental excitability and dread of pain. Dr. Prince's diagnosis was, therefore, some form of compression, with hysterical symptoms. At his advice massage to the legs was given daily and the patient improved rapidly.

The third jacket was put on April 1st, and at that time photographs of the back were taken showing deformity. At this time another examination of the blood showed a positive Widal reaction. The patient left for Virginia on April 6th. On April 11th, 13th and 15th he had chills and high temperature, probably of malarial origin. At the time that he left for the South he was able to walk with crutches or for a short distance with canes.

In July, 1899, he reported to Dr. Lovett, still wearing his jacket. For a month previous to this he had been able to walk a mile or two without assistance, he could play golf, and was unconscious of any pain whatever in his back so long as the cast was applied. The cast was cut and fastened with straps, and on the succeeding day, as the cast was soft and afforded improper support, he began to feel fatigue and discomfort in his back again. An accurately fitted leather jacket, re-enforced with steel, was then made, which immediately relieved his symptoms, and the patient returned South again.

On October 3d, he reported, still wearing the leather jacket. At this time he was able to ride horseback, walk long distances, hunt, and had gained about thirty pounds in flesh. The deformity was still present, although less evident on account of the better development of the muscles. The movement of the spine was perhaps two-thirds of the normal in all directions. When standing with the knees straight he could stoop so that the hands came within sixteen inches of the floor, he had no pain in movements and very slight tenderness in the spine; what there was remained chiefly over the transverse processes of the second lumbar vertebra. At this time he returned to the practice of medicine, the only restriction being that he should lie down for an hour and a half in the middle of the day.

On November 16, 1899, he reported again. He was engaged in the active practice of medicine and was able to do his full work without discomfort or fatigue. The movements of the spine had improved, and he could go without his jacket two or three hours without discomfort, and with the knees straight he could stoop to within thirteen inches of the floor. Tenderness of the back had disappeared, but the anesthetic patches on the outside of the thigh persisted to a slight extent.

On December 2, 1899, he reported that he was getting along very comfortably, was able to do his full work and that he had no discomfort in his back, was still wearing his leather jacket and spent one hour and a half a day in the recumbent position.

The first questions which arise are whether the patient had typhoid fever, and if so when? To the former we can at once reply affirmatively, on the strength of the unusually prompt and positive response to the Widal test on December 30th, which seems to be the first date at which the test was applied. This was confirmed by subsequent tests. That he had never had typhoid prior to his Cuban experience we can be sure. Did, then, his typhoid occur in Cuba or soon after his residence at Montauk (where typhoid prevailed), or was it first present during the febrile movement which occurred in the hospital? None of the signs of the disease, in the way of roseola, spleen or diarrhea were noted while he was in the hospital, and it is more reasonable to suppose that his attack in Cuba was, like that of many other soldiers, a mixed infection by malaria and typhoid. The fixing of the disease in July would also be more consistent with the first occurrence of the spinal symptoms in October, and the fever curve of December and January, if not typhoid and not malaria, is quite explainable by the spondylitis, as will be seen by comparison with other cases mentioned hereafter.

With regard to the exclusion of tuberculous disease of the spine it may be said that the clinical aspect of the case was not that of ordinary Pott's disease. The muscular rigidity seemed largely voluntary, the pain was excessive, tenderness of the spine was present and there was pain referred to the peripheral ends of the nerves. The tuberculin test was negative. The Widal test was positive. The subsequent history of the case and the rapid recovery, good mobility of the spine returning within nine months of the most acute period, is not characteristic of severe Pott's disease in the adult.

The so-called typhoid spine means, according to different authors, either (1) a neurosis or (2) a spondylitis or perispondylitis. The former view is held by Osler, the latter by Gibney, and in part by Quincke. In our case some of the symptoms would correspond to a neurosis, as, for example, the distribution of the areas of anesthesia on the thighs, the increased reflexes, ankle clonus, etc. But the character of the projection of the spinous processes of the vertebræ made it evident that in this case there must be present a destructive inflammation of the vertebral bodies in the lower dorsal region. As may be seen in the picture, the projection was of considerable size, the spinous processes could be easily made out and their angular projection could only be accounted for by the giving way of some part of the weight-bearing portion of the vertebral column. A periostitis could not explain it; one must assume an osteomyelitis to have been present. So far as the writers have been able to learn, this is the only case of well-authenticated typhoid spine accompanied by deformity.

The cases of Quincke are of special interest in this connection. In the first case the fever was over on the fifteenth day. On the twenty-first day occurred a relapse, which lasted a week. On the thirty-fourth day occurred a rise of temperature and lumbar pain. There was pain on rising in bed and tenderness over both sides of the spinal processes. This lasted but a few days and the patient sat up at the end of seven weeks. In a day or two the symptoms returned with greater violence and lasted altogether from two to three months. There was chill, irregular fever, swelling in the right lumbar region, girdle sense, retention of urine, and for a short time diminution of the patellar reflex. In the second case the typhoid was milder but more protracted. Towards the end of the fever there was a transient periostitis of the parietal

bone. The vertebral disease showed itself ten weeks after the defervescence, and several weeks after the resumption of work (blacksmithing). During the period of the spondylitis there was fever of an intermittent type. In both cases the lumbar spine was chiefly involved, but covering a large area, namely, four to six vertebræ. In both there was visible swelling of the soft parts and tenderness of the vertebral spines and bodies. Both cases showed paresthesia of the lower extremities and slight rigidity in some of the leg muscles. The limitation of movements was due chiefly to the pain, but it was not certain that there was any true paresis. Quincke concludes from analogy of the visible changes in superficial bones that there was in these cases an inflammatory swelling of the periosteum, with serous infiltration on the inner as well as the outer surface of the vertebral column which compressed the nerve roots of the cauda equina in the second case, while in the first case (in which the process involved the lower dorsal vertebræ), there was also compression of the inferior part of the conus medullaris, which would account for the bladder and rectal paresis in that patient.

Numerous observers have now demonstrated the occurrence of the typhoid bacillus in bone marrow, and this organism has come to be recognized as one of the many morbific agents concerned in bone inflammation. In those cases of "typhoid spine," therefore, in which spondylitis has a part, the latter may be considered as one phase of the bone involvement of typhoid, which in the case of the tibia, the ribs and the femur we have learned to expect. It is, therefore, interesting to recall that in one of Quincke's cases there had been earlier in the typhoid a periostitis of the parietal bone, which had undergone resolution. If we are to assume, in addition to the massing of typhoid bacilli in the vertebra, some local strain or injury involving those parts, it is likely that laborious work, undertaken before the bodily strength is fully re-established, may serve as such a factor. In one of Quincke's cases such a strain might have come from the occupation of the patient, who walked and climbed stairs carrying a peddler's pack, and in the other from his trade as a blacksmith, in which he had resumed swinging a heavy hammer for some time before the onset of the spinal symptoms. The same is true of Könitzer's patient, also a blacksmith. In our patient the active practice of medicine had perhaps been taken up too soon. In Gibney's first case the pain in the back began during convalescence; in the second case after a railroad journey undertaken during convalescence; in the third case spinal symptoms began after a fall in skating after convalescence seemed ended. In these cases there is no mention made of any unusual nervous condition.

Is the so-called typhoid spine a neurosis or a bone lesion? Two of the prominent authors who have recently answered this question have given their replies in accordance with their respective points of view, Osler, from the medical side, considering it a neurasthenic phenomenon, and Gibney, from the surgical, a perispondylitis. Osler's minor cases [2] especially suggest neuroses, in the brevity of their course and their onset at about the beginning of typhoid convalescence. His first group of cases,[3] however, are more similiar clinically to Gibney's, coming on from three to eight weeks after convalescence, and lasting each for several months. He also includes a case in which there was diminished sensation in the legs with paresthesia, but no pain or tenderness of the spine, occurring in an alcoholic and venereal subject, after typhoid.

The longevity of the typhoid bacillus in certain parts of the body is well known, as for example, in the gall-bladder and in bone marrow of some of the typhoid bone lesions.

Dr. Parsons [4] emphasizes this lateness in the evolution of typhoid ostitis and periostitis, saying that they vary from one to sixteen months after the fever. With one exception they have never been known to

occur during the course of the fever. Necrosis and suppuration do not always take place. Parsons thinks that such cases as Gibney's perispondylitis are perhaps to be considered as belonging to the same category with the more common typhoid lesions in the tibia, and other long bones, the sternum, etc., though the bacteriological proof is wanting.

The case upon which this paper is based had been considered, up to the time of the development of the knuckle, to be a post-typhoid neurosis. Had the deformity not appeared it would probably have continued to be so regarded. Reasoning from the analogy of

[2] Johns Hopkins Hospital Reports, vol. v, p. 315.
[3] Ibid, vol. iv, p. 73.
[4] Johns Hopkins Hospital Reports, vol. v, p. 417.

other post-typhoidal bone lesions, we may conclude that an osteomyelitis or possibly periostitis of the vertebræ is present in some of the cases which have been supposed to belong in the neurotic class of typhoid spines.

BIBLIOGRAPHY.

Gibney. Transactions American Orthopedic Association, vols. ii and iv.
Osler. Johns Hopkins Hospital Reports, vols. iv and v.
Quincke. Mittheil. aus den Grenzgeb. der Medicin and Chir., 1898, p. 585.
Könitzer. Münch. med. Woch., August 29, 1899, p. 1145.
Parsons. Johns Hopkins Hospital Reports, vol. v.
Keen. The Surgical Complications of Typhoid Fever.

IDIOPATHIC PNEUMOHEMATOTHORAX, WITH RECOVERY AFTER ASPIRATION.[1]

BY ELISHA S. BOLAND, M.D., SOUTH BOSTON.

MR. T. is thirty-four years of age, married. Born in Maine. Never seriously sick, except some eight years ago, when he was confined to the house two or three weeks with the "grip." During early manhood he followed the sea, and at this work gained the summit of his weight, 170 pounds; present weight about 150 pounds. After he gave up going to sea he worked as a marble cutter for some time, but gave this up by the advice of his physician, as there was some premonition of lung trouble. Of late years he has been at work in a grocery and provision store, meat cutting, etc. Sometimes has felt pain in right side when he had to shoulder or carry a heavy quarter of beef. He is erect, spare, active and strong, of temperate habits, and takes good care of himself. Family history is negative as to phthisis. Father alive and well at sixty-four; mother died at thirty-five; cause of mother's death not known. He was in his usual health and did his work on July 20, 1899. That evening, while sitting near an open window — it being very warm — he felt some pain about the waist on the right side. After this he remembers he got up, stretched himself vigorously and went to bed, where he slept a few hours. When, during the night, he awoke he felt very severe pain in the right chest in front, and had "a feeling of wind escaping there," and found motion of any kind made it worse, and felt weak and was feverish and short of breath, and suffered much until morning.

When I found him at 8.30, July 21st, he was lying on his left side, and could not not sit up or turn without great pain and dyspnea. Pulse 108, temperature 102°, respiration 28 and shallow. There was a pale, cyanotic tint in the face. Most free from pain when lying quiet in bed, and found the changes of position needed for a physical examination very severe. Pain most severe over the right chest, a little below and rather internal to the nipple. In this area could be heard a peculiar amphoric sound to be detected nowhere else in the chest. Over the right apex and thence down about two inches below the clavicle a modified respiratory murmur could be heard, and in the corresponding area in the axilla and back also. Over the entire lower part of the right chest, front, side and back no respiratory sounds could be heard; no fremitus nor tubal breathing. Percussion gave a tympanitic note over the area. The physical signs were so marked that, though I had never seen a case of pneumothorax before, I had no doubt of the diagnosis here. The dominant symptoms being pain and dyspnea on motion, he was given small doses of morphine and antifebrin and kept in bed, with mild counterirritants over the affected area.

The next day he was somewhat easier as to pain, and pulse and temperature were both a little lower. On getting him into an erect position, however, it was evident that some effusion was accumulating in the lower part of the air-filled chest cavity. He was less markedly cyanotic and when quiet in bed he was so easy that it was hard to get him and his wife to realize the gravity of his condition and my urgent request for counsel was only reluctantly acceded to. As he was feeling even easier the next day when Dr. Vickery was kind enough to call and see him in consultation, the welcome we got was not effusive. Not wishing to bias Dr. Vickery's mind I told him nothing of what I had found; in fact, unintentionally misled him by telling him the left side was at fault. The doctor, however, very soon sized the case up, as his notes will show, and, in fact, it was hard at this stage not to be struck by the pronounced pathological conditions present, — the effusion having increased in amount and, owing to the large air chamber above it, shifted its level with every change made in the patient's position. (We speak of the liquid as an effusion here, as at this time neither of us believed it was other than the usual pleuritic fluid.) Some tiresome cough having come with the development of pressure from the fluid a sedative mixture was advised, as also the continued use of the rubefacients. As the pain was less sharp since the fluid came and the dyspnea no worse, the patient was allowed to sit up and, as it was warm, to go out in a limited way. He was beginning to eat and his pulse and temperature did not go up, nor were there any rigors. At Dr. Vickery's suggestion, aspiration was delayed in the hope of absorption. However, at the end of twenty-two days, as his general condition did not improve and there was no evidence of the fluid receding, it was thought best to aspirate. The largest needle of the aspirator, after being boiled, was introduced in the posterior axillary line between the seventh and eighth rib, and held, after penetrating the chest wall, approximately parallel with the diaphragmatic floor. As soon as the vacuum was connected I was dismayed to see a stream of dark red blood pour into the bottle, where only serum or, at most, pus was expected. Visions of anomalous venous channels flashed through my mind, and I heartily wished I had continued to temporize, but I felt I was in for it, and had better make the best of it, as I could not be held responsible for anomalies. The large needle caused great pain, and after about thirty-four ounces had been withdrawn and the flow was becoming intermittent, the needle was withdrawn and the puncture sealed up aseptically with sterile cotton and collodion. No air was withdrawn and after the immediate pain of the operation was over the patient felt easier, and in a day or two was out and about again. The line of flatness was reduced by this aspiration about two and one-half inches. At the end of fifteen days the effusion had reaccumulated and the line of flatness was as high as ever. The resonant air layer seemed practically unchanged — possibly a little less.

A second aspiration was done with the large needle in the seventh interspace, but a little further poster-

[1] Read at the meeting of the Boston Society for Medical Improvement, December 18, 1899.

(Continued on page 328.)

THE OPEN OR OPERATIVE TREATMENT OF FRESH FRACTURES; IS IT EVER JUSTIFIABLE?[1]

UNSELECTED CASES OF FRACTURE TABULATED IN ORDER TO SHOW THE RESULTS MANY YEARS FOLLOWING TREATMENT.

BY CHARLES L. SCUDDER, M.D., BOSTON.

Surgeon to the Massachusetts General Hospital, Out-Patient Department; Assistant in Clinical and Operative Surgery, Harvard University.

(Concluded from No. 12, p. 293.)

TABLE I.

FRACTURES OF THE HIP. RESULTS TWO AND ONE-HALF TO TWENTY-FOUR AND ONE-HALF YEARS AFTER THE ACCIDENT.

No.	Sex. Age.	Injury.	Time Spent in Hospital.	Time Elapsed since Accident.	Present Condition.	Examination.
1	Male. 60.	Unimpacted, left.	3 weeks.	2 years, 8 months.	Rheumatism. Cripple; walks around yard only.	One inch shortening; atrophy of thigh, 1½ inches; atrophy of calf, ½ inch. Movements are much limited by rheumatism. Cannot raise hand to mouth; very lame.
2	Adult.	Right.	6 weeks.	4 years, 3 months.	Not as good as before accident. A little stiff.	One and one-eighth inches shorter. Right knee bends only to right angle. Movement of hip limited.
3	Male. 42.	Outer part of neck.	8½ weeks.	2 years, 7 months.	Practically as good as ever. Slight grating in joint at times. Walks as well as ever.	
4	Male. 44.	Left.		4 years.	Much atrophy. Pain, hip to knee on walking and at night in the fracture.	
5	Adult.	Impacted.	4 months.	14 years.	Pain in hip and from sole of foot up to hip. Leg is swollen and weak. Pain in walking.	
6	Male. 47.	Unimpacted, right.	3 months.	1 year, 5 months.	Amputation of thigh below the hip for subsequently fractured leg. Some pain in hip.	
7	Male. 60.	Unimpacted, left.	8 weeks.	7 years, 2 months.	Not as good as before accident. Pain on going upstairs and on stooping.	Atrophy of left gluteal muscles. Slight limp; walks with foot slightly everted. Left foot lies on outer side (marked eversion). Flexion, adduction and abduction very slightly limited; rotation inward limited two-thirds. Length of left leg, 35½ inches; length of right leg, 36½ inches; circumference of left thigh, 16½ inches; circumference of right thigh, 16 inches; circumference of left calf 12 inches; circumference of righ calf, 12 inches.
8	Female. 45.		9 weeks.	18 years.	Not as good as before accident. Pain according to weather.	
9	Female. 55.		8 weeks.	23 years.	Limp; short leg; uses a cane. Always feels it slipping; pain on stepping forward.	
10	Male. 46.	Unimpacted.	7 weeks.	6 years, 2 months.	Limp; pain.	
11	Male. Old.	Left.	4 weeks.	6 years, 4 months.	Weak; lame; uses a crutch.	
12	Male. 45.	Unimpacted.	3 weeks.	7 years, 2 months.	Yes, as good as before accident. Aches in stormy weather.	
13	Female. 50.	Unimpacted.	10 weeks.	6 years, 9 months.	Hip is turned. Pain all time.	
14	Female. 65.		9 weeks.	10 years, 8 months.	Lame; pain hip to knee.	
15	Male. 50.		10 weeks.	24 years, 7 months.	Nearly as good as ever. One and one-half inches shorter.	
16	Female. 46.	Unimpacted, left.	3½ weeks.	6 years.	Walks with crutch. Pain in hip all the time.	Left, 2 inches short. Rotation, including all motion, limited.

TABLE II.

FRACTURES OF THE THIGH. RESULTS ONE AND ONE-HALF TO SEVEN YEARS AFTER THE ACCIDENT.

No.	Sex. Age.	Seat of Injury.	Treatment.	Time Spent in Hospital.	Splint Worn.	Time of Union.	Time Elapsed Since Accident.	Present Condition Functionally.	Examination of Cases Reporting.
1	Male. 48.	Supracondyloid.	Wired.	6 weeks.	6 weeks.	6 weeks.	4 years, 6 months.	Absolutely perfect.	
2	Female. Adult.	Middle one-third, right		9 weeks.	19 weeks.	8 weeks.	4 years, 10 months.	No trouble, motion one-half way.	
3	Male. 15.	Supracondyloid.		4½ weeks.	8 weeks.	6 weeks.	5 years, 7 months.	Absolutely perfect.	
4	Male. 30.	Middle one-third, right.	Wired.	17 weeks.	21 weeks.	6 weeks.	1 years, 5 months.	Stiffness of knee.	One and three-eighths inches shortening. Knee stiff and weak in going down hill and upstairs.

[1] Read at a meeting of the Surgical Section of the Suffolk District Medical Society, December 6, 1899.

TABLE II. (Continued.)

No.	Sex. Age.	Seat of Injury.	Treatment.	Time Spent in Hospital.	Splint Worn.	Time of Union.	Time Elapsed Since Accident.	Present Condition Functionally.	Examination of Cases Reporting.
5	Male. 14.	Middle, right.		11 weeks.	8 weeks.	6 weeks.	3 years, 5 months.	Absolutely perfect.	
6	Male. Child.	Separation of lower femoral epiphysis.		10 weeks.	8 weeks.		3 years.	Some stiffness at knee, but strong and no trouble.	Motion in knee perfect; no deformity.
7	Male. 38.	Middle.	Hip splint.	5 weeks.	10 weeks.	4 weeks.	3 years.	Absolutely perfect.	
8	Female. 2.	Junction of middle and lower one-third.	Suspension.	7½ weeks.	4 weeks.		2 years, 9 months.	Perfect.	Perfect.
9	Male. 57.	Junction of middle and upper one-third, right.		10 weeks.		8 weeks.	4 years, 6 months.	Not quite as good as before accident. Pains wet weather.	One-half inch shortening; knee to right angle only.
10	Female. 45.	Right.	Wired.	12 weeks.	10 weeks.	8 weeks.	5 years.	Not as good as before accident. Knee is stiff and lame. Leg is weak.	
11	Male. Adult.	Middle one-third, left.		8 weeks.	16 weeks.		5 years.	Not as good as before accident. Knee is stiff.	
12	Female. Adult.			8 weeks.	10 weeks.		4 years, 10 months.	Not as good as before accident. Pain at times; weak.	
13	Male. 7.	Middle, left.		8 weeks.	6 weeks.	5 weeks.	2 years, 4 months.	Absolutely perfect.	Perfect. No atrophy.
14	Male. 47.	Middle, right.		10 weeks.	40 weeks.	9 weeks.	3 years, 7 months.	Perfect. Bony deformity.	Right 2½ inches short. Knee flexion slightly limited. Refractured three times.
15	Male. 22.	Middle, left.		9 weeks.	12 weeks.	8 weeks.	2 years, 9 months.	Slight shortening (1 inch). Pains wet weather. Tired in walking.	
16	Male. 18.	Right.		20 weeks.		6 weeks, first fracture. 7 weeks, second fracture.	4 years, 6 months.	All right. Enlisted in the army.	
17	Male. 3.	Junction of lower and middle one-third, left.	Suspended.	8 weeks.	8 weeks.	4½ weeks.	3 years, 8 months.	Some stiffness and aching.	
18	Male. 7.	Middle.		8 weeks.		5 weeks.	4 years, 6 months.	As strong, not so straight.	
19	Male. 58.	Junction of upper and middle one-third.		13 weeks.	11 weeks.	11 weeks.	2 years, 4 months.	Strong. Knee, whole thigh stiff. Lame. Cannot dress foot. Rheumatic.	
20	Male. 40.	Upper one-third.		13 weeks.	10 weeks.	5 weeks.	2 years, 9 months.	Painful in walking. Motions normal.	
21	Male. 65.	Junction of lower and middle one-third.			6 months.	No union.	6 years, 4 months.	False joint. Pain in knee. Limp. Cane.	Three inches shortening; 1 inch atrophy of thigh and calf.
22	Male. Adult.	Middle.		12 weeks.	8 weeks.	6½ weeks.	5 years.	Knee painful going up and down stairs. Great stiffness following injury.	Length same; no atrophy, no deformity.
23	Male. 18.	Supracondyloid, left.		12 weeks.		4 weeks.	6 years.	No trouble.	One-half inch atrophy of left thigh, no callus or deformity.
24	Male. 2.	Middle, right.		4 weeks.	6 weeks.		6 years, 1 month.	No trouble.	
25	Male. 21.	Middle one-third, left.		18 weeks.	6 months.		1 year, 7 months.	Muscles weak; ache occasionally.	
26	Male. 15.	Middle, left.		16 weeks.	14 weeks.		1 year, 6 months.	Slight shortening. Stiffness of knee; 45° flexion.	Three-fourths inch shortening; 3 inches atrophy of left calf, considerable deformity.
27	Male. 59.	Junction of lower and middle, oblique, left.		9 weeks.	13 weeks.	3 weeks.	3 years, 7 months.	Uses cane and crutch. Pain in using.	
28	Male. 7.	Just above middle, left.		6 weeks.	5 weeks.	3 weeks.	3 years, 8 months.	Perfect.	Perfect.
29	Female. 3½.	Below middle, right.		3 weeks.			1 year, 6 months.	Perfect.	Left ¼ inch longer.

TABLE II. (Continued.)

No.	Sex. Age.	Seat of Injury.	Treatment.	Time Spent in Hospital.	Splint Worn.	Time of Union.	Time Elapsed Since Accident.	Present Condition Functionally.	Examination of Cases Reporting.
30	Male. 40.	Below middle, left.		5 months.			1 year.	Delayed union. Weak. Knee stiff. Swelling of leg.	Brawny knee and calf; patella movable; slight motion at knee only.
31	Male. 9.	Junction of upper and middle one-third, right.		5 weeks.	9 weeks.	4 weeks.	1 year, 8 months.	When runs for a long time pains a little. Yields to it a little.	Perfect.
32	Male. 11.	Middle, right.		6 weeks.	3 weeks.	7 weeks.	6 years, 9 months.	Perfect.	Perfect.
33	Female. Young. Adult.	Middle, left.		5 weeks.	8 weeks.		5 years, 4 months.	Perfect. Slight forward and outward bowing.	Right thigh, 1 inch atrophy; right calf, ½ inch atrophy; slight limp; ½ inch shortening of right.
34	Male. 9.	Junction of upper and middle one-third, left.		5 weeks.			5 years, 3 months.	Perfect.	
35	Male. 53.	T into joint.		8 weeks.	3 months.		3 years, 5 months.	Swells and pains when stands much upon it.	

TABLE III.

FRACTURES OF THE PATELLA TREATED BY THE NON-OPERATIVE METHOD. RESULTS ONE AND ONE-HALF TO TEN AND ONE-HALF YEARS AFTER THE ACCIDENT.

No.	Sex. Age.	Injury.	Treatment.	Time Spent in Hospital.	Time Elapsed Since Accident.	Present Condition.
1	Male. 36.	Transverse, no separation. Direct violence.	5 months.	8 weeks.	2 years, 1 month.	As strong as before accident. No pain; limited in motion; slight beyond right angle.
2	Male. 21.	Right, comminuted. Left stellate. Direct violence.	6 weeks.	3 weeks.	10 years, 7 months.	As good as before accident. Good motion.
3	Male. 21.	Right and left, muscular violence.	6 months.	7 weeks.	7 years, 9 months.	Not as good as before accident. Crack and feel stiff. Half of normal.
4	Female. 44.	Right, transverse, middle.	3 months.	5½ weeks.	4 years, 1 month.	Not as good as before accident. Aches and burns on sitting. Motion much limited.
5	Male. 19.	Right, transverse, no separation. Direct violence.	6 months.	5 weeks.	2 years, 10 months.	Just about as good as before accident. Not as strong; some atrophy of muscles. Motion slightly limited.
6	Male. 38.	Left, oblique, ½ inch separation. Direct violence.	7 months.	8 weeks.	5 years, 2 months.	Not quite as good as before accident. Motion normal.
7	Male. 28.	Right at middle. Direct violence.	5 months.	6 weeks.	5 years, 2 months.	About as good as before accident. Weak; motion almost normal.
8	Male. 26.	Right, lower part, ½ inch separation. Muscular violence.	10 weeks.	10 weeks.	4 years, 5 months.	Not as good as before accident. Stiffness in damp weather; slight limitation of flexion.
9	Male. 29.	Middle transverse, ½ inch separation. Direct violence.	9 months.	4 weeks.	6 years, 7 months.	Not as good as before accident. Flexion limited half.
10	Female. 38.	Right, transverse. Muscular violence.	6 weeks +.	6 weeks.	3 years, 5 months.	Not as good as before accident. Weak; trouble in going up and down stairs. Motion normal.
11	Male. 37.	Right. Direct violence.	3 months.	4 weeks.	6 years, 6 months.	Not as good as before accident. Weak; pain after unusual exertion and in damp weather. Motion to right angle.
12	Male. 39.	Left, compound, oblique. Thigh too.	18 months.	8 weeks.	6 years, 9 months.	Not as good as before accident. Motion limited to 3°, much atrophy of calf; fractured thigh as well; upper one-third oblique. Union 8 weeks.
13	Male. 21.	Left, 1 inch separation. Indirect violence.	8 months.	4 weeks.	6 years, 5 months.	As good as before accident. Motion unlimited.
14	Female. 47.	Indirect violence.	13 months.	8 weeks.	10 years, 1 month.	Not as good as before accident. Weak and stiff. Motion less than to a right angle.
15	Male. 61.	Right, 2 inches separation. Direct violence.	6 months.	12 weeks.	8 years, 2 months.	Right hemiplegia; blind. Knee quite stiff.
16	Male. 19.	Right, transverse. Direct violence.	6 weeks?	6 weeks.	1 year, 4 months.	Not as good as before accident. Motion half-way, right angle; stepping up a height difficult. Right thigh, 1 inch atrophy. Right calf, ½ inch atrophy.
17	Male. 11.	Left, 3 inches separation.	6 months.	4 weeks.	8 years.	As good as before accident. Motion normal.
19	Male. 58.	Right. Direct violence.	Several years.	4 weeks.	5 years, 11 months.	Not as good as before accident. Motion half flexion.
20	Male. 34.	Right compound, leg, patella. Direct violence.	3 months.	6 weeks.	5 years, 2 months.	Not quite as good as before accident. Kneeling is painful; motion normal.
21	Male. 54.	Left. Direct violence.	8 months.	9 weeks.	7 years.	Weaker. Motion nearly normal.
22	Female. 36.	Right, double fracture. Left, transverse at middle. Direct violence.	6 months.	5 weeks.	9 years, 5 months.	As good as before accident. Motion perfect.
23	Male. 28.	Left. Indirect violence.	6 months.	3 weeks.	5 years, 1 month.	As good as ever.

TABLE III. (Continued.)

No.	Sex. Age.	Injury.	Treatment.	Time Spent in Hospital.	Time Elapsed Since Accident.	Present Condition.
24	Male. 30.	Right, transverse, junction of middle and lower one-third. Indirect violence.	8 weeks.	8 weeks.	10 years, 4 months.	Almost as good as before accident. Stepping on irregular surfaces causes pain in knee. Motion slightly limited.
25	Male. 32.	Right, transverse, middle, ¼ inch separation. Indirect violence.	8 months.	5 weeks.	2 years, 1 month.	Not as good as before accident. Motion less than half; pain and stiff in going up and down stairs.
26	Male. 42.	Left, transverse, lower down, ½ inch separation. Direct violence.	6 months.	5 weeks.	4 years, 6 months.	Not as good as before accident. Weak; no pain. Trouble in going up and down stairs; cannot run with it. Flexion and extension normal; not strong in extension; 2 fingers' separation in extension, 3 fingers' separation in flexion.
27	Male. 44.	Right. Muscular violence.	6 months.		2 years.	Flexion right angle, extension normal; ¼ inch separation.
28	Male. 32.	Left, transverse, middle, ¾ inch separation. Muscular violence.	9 months.	5 weeks.	7 years, 9 months.	Almost as good as before accident. Left, more than finger's breath separation. In running is hindered, cannot lift legs quickly; can walk up and down stairs all right. Right, less than a finger's breath separation.
29	Male. 28.	Right, transverse, middle. Muscular violence.	9 months.	8 weeks.	10 years, 2 months.	Flexion and extension, normal distance.
30	Male. 21.	Right compound, ¼ inch separation.	8 months.	4 weeks.	2 years, 3 months.	Almost as good as before accident. Flexion to right angle; ¼ inch separation; 2 inches atrophy of thigh; ¾ inch atrophy of calf.
31	Female 37.	Right, transverse, above middle. Indirect violence.	6 months.	4 weeks.	6 years, 7 months.	Not as good as before accident. Gives way in walking and falls. Motion limited.
32	Male. 27.	Transverse.	6 months.	4 weeks.	7 years, 4 months.	Not as good as before accident. One-half finger separation. Fragments larger than normal patella.
33	Male. 23.	Right, transverse.	2 months.	5 weeks.	7 years, 10 months.	Just as good as before accident. Motion slightly limited. Cold at times.
34	Male. 30.	Right, tranverse, ¼ inch separation.	15 weeks.	6 weeks.	7 years, 9 months.	Almost as good as before accident. Motion limited; bad at times.
35	Male. 24.	Right.	6 months.	9 weeks.	9 years, 4 months.	Almost as good as before accident. Favors it. Flexion about normal.
36	Male. 30.	Left, lower one-third. Direct violence.	6 months.	3 weeks.	5 years, 9 months.	Nearly as good as before accident. Aches and pains at times. Flexion slightly limited. Left calf and thigh slightly atrophied; up and down stairs perfect. Kicks and runs the same.
37	Male. 19.	Left, transverse, low, 1 inch separation. Direct violence.	1 year.	3 weeks.	5 years, 3 months.	Almost as good as before accident. Walks up and down stairs. Motion about normal. Separation less than finger. Kicks and runs perfectly.

TABLE IV.

FRACTURES OF THE PATELLA TREATED BY OPERATION. RESULTS AFTER FROM ONE TO NINE YEARS.

No.	Sex. Age.	Injury.	Treatment.	Time Spent in Hospital.	Time Elapsed Since Operation.	Present Condition.
1	Male. 24.	Right, compound, three pieces.	Wired. Operator, C. B. Porter.	11 weeks.	2 years, 4 months.	About as good as before accident. Cannot kneel down on it. Has motion beyond a right angle.
2	Male. 28.	Right, transverse. Direct violence.	Wired. Operator, C. B. Porter.	4 weeks.	2 years, 4 months.	Almost as good as before accident.
3	Male. 31.	Refracture, ¾ inch separation.	Expectant 12 months. Wired. Operator, C. B. Porter.	5 weeks.	5 years, 2 months.	Not as good as before accident. Pain after over-exertion and in cold weather. Motion slightly limited.
4	Male. 41.	Right. Indirect violence.	Wired 1 week after injury. Six months. Operator, C. P. Porter.	6½ weeks.	2 years.	Not as good as before accident. Soreness and painful at times. Motion much limited. One-eighth inch separation.
5	Male. 27.	Left, almost no separation. Indirect violence, etc.	Wired 1 week after injury. Five weeks. Operator, W. M. Conant.		3 years, 3 months.	Practically as good as before accident. Trouble in going up and down stairs. Cannot run. Cannot get on and off cars without difficulty. Motion to right angle in flexion. Enlarged left patella. Bony union. Wire felt through skin. Measurements of thigh and calf the same.
6	Male. 18.	Indirect violence, transverse, lower, 1½ inches separation.	Wired. Seven weeks. Operator, C. B. Porter.	4 weeks.	3 years, 9 months.	Not as good as before accident. Cannot kneel on it. Rides bicycle. Bony union. Wire felt. Slight limitation of flexion. No muscular atrophy. Aches occasionally on going up and down stairs.
7	Female. Adult.	Old fracture, direct violence 5 years before.	Wired. Skin fascia capsule divided. Operator, C. B. Porter.	6 weeks.	1 year.	As well and as strong as before accident. Limited in flexion.
8	Male. 27.	Left, indirect violence, junction of lower and middle one-third.	Wired. Six weeks in splint. Operator, C. B. Porter.	3 weeks.	1 year.	As good as before accident. Flexion slightly limited.
9	Male. 45.	Indirect violence, wired.	Eleven weeks in splint. Operator, F. B. Harrington.	3½ weeks.	2 years, 4 months.	Almost as good as before accident. Very slight limitation of flexion.

TABLE IV. (Continued.)

No.	Sex. Age.	Injury.	Treatment.	Time Spent in Hospital.	Time Elapsed Since Operation.	Present Condition.
10	Male. 24.	Ligamentous union after fracture in 1897; separation then ½ inch, now 1½ inches separation exists, and is increasing.	Wired. Operator, S. J. Mixter.	4 weeks.	1 year, 4 months.	Not as good as before accident. Limitation of flexion.
11	Male. 65.	Compound comminuted. Direct violence.	Wired, 7 months. Operator, C. L. Scudder.	3 weeks.	2 years, 2 months.	Not as good as before accident. Weak. Motion slightly limited.
12	Male. 19.	Left. Indirect violence.	Wired, 4 months. Operator, J. C. Warren.	3 weeks.	5 years, 7 months.	As good as ever. Stiff after sitting. Motion slightly limited.
13	Male. 32.	Left. Direct violence.	Pins. Operator, J. C. Warren.	3 weeks.	9 years, 2 months.	Not as good as before accident. Not as strong. Cannot run and jump. Motion normal.
14	Male. 31.	Indirect violence, 1 inch separation.	Sutured with catgut. Six months in splint. Operator, J. Homans.	3½ weeks.	7 years.	Not as good as before accident. Some stiffness. Some pain. Motion limited.
15	Male. 39.		Sutured with silk. Two months. Suppurated superficially. Operator, J. Homans.	11 weeks.	7 years, 1 month.	Not quite as good as before accident. Aches above the knee. Motion limited.

TABLE V.

FRACTURES OF THE LEG. RESULTS ONE YEAR AND FIVE MONTHS TO TEN YEARS AFTER THE ACCIDENT.

No.	Sex. Age.	Injury.	Duration of Treatment.	Time Spent in Hospital.	Time of Union.	Time Elapsed Since Accident.	Present Condition.
1	Male. Adult.	Left compound, tibia, middle.	16 weeks.	4 weeks.	Wound healed, 4 weeks.	4 years, 2 months.	As good as before accident. Left thigh ¾ inch smaller. No trouble. Perfect functionally.
2	Male. 22	Left compound, both bones at middle third, oblique.	17 weeks.	6 weeks.		9 years, 4 months.	Not as good as before accident. Sore and lame in fracture. Able to work perfectly. Left thigh, ½ inch atrophy. Left calf, ½ inch atrophy. Slight flat-foot on left side.
3	Male. 42.	Right. Both, 2 inches above ankle.	8 weeks.	2 weeks.		2 years, 8 months.	As good as before accident. Right thigh, ¾ inch atrophy. Pain with weather changes.
4	Male. 36.	Left tibia 2 inches above ankle, oblique. Left fibula 4½ inches above ankle. Right fibula 2½ inches above ankle.		10 weeks.		5 years.	Not quite as good as before accident. Cramps at night, right calf. Left shorter. Left thigh, 1 inch atrophy. Right, flat. One year ago injured right ankle again. Since then pain in it in wet weather.
5	Male. 27.	Both compound. Junction middle and lower one-third.	8 weeks.	6 weeks.	Solid 10 weeks, wound closed 6 weeks.	5 years, 4 months.	As good as before accident. Cannot run quite as well as before.
6	Male. 60.	Both compound 2 inches above ankle.	18 weeks.	3 weeks.	Wound closed 2 weeks.	6 years, 5 months.	Not as good as before accident. Some deformity. Pain on long standing.
7	Male. 36.	Left tibia and fibula near ankle, astragalus?	4 weeks.	4 weeks.	5 weeks union, ankle motion.	3 years, 2 months.	Not as good as before accident. Ankle is quite stiff.
8	Male. Adult.	Both compound, transverse.	18 weeks.	3 weeks.		3 years, 9 months.	The leg swells, so that it must be bandaged. The skin does not get hard over the fracture.
9	Male. 49.	Right compound 3 inches above ankle.	21 months.	11 weeks.		7 years, 3 months.	Not as good as before accident. Leg is weak. Stiffness in the ankle and foot.
10	Male. 11.	Left. Both same level, 4 inches above ankle.	4 weeks.	4 weeks.	4 weeks.	1 year, 5 months.	As good as before accident.
11	Male. Adult.	Tibia. Junction middle and upper one-third.	2 months.	2 weeks.		3 years, 1 month.	As good as before accident.
12	Male. 57.	Left. Both transverse, 3 inches above ankle.	4 weeks.	3 to 4 weeks.	4 weeks.	9 years, 1 month.	Not as good as before accident. Pains and is stiff.
13	Male. Adult.	Right. Both compound comminuted. Left. Pott's.	6 months +.	9 weeks.		5 years, 6 months.	Not as good as before accident. Leg is weak. Ankle pains. Right leg pains after work. Left perfect.
14	Female. 42.	Both high. Epiphyseal line.		5 weeks.	4 weeks.	4 years, 2 months.	Not as good as before accident. Pain in calf high up. Flexion limited just beyond right angle. No shortening.
15	Male. Adult.	Left. Both compound, 3 inches above ankle.	3 months.	6 weeks.	4 months solid.	3 years, 7 months.	Not as good as before accident. Rheumatism. Swelling of the foot.
16	Male. 50.	Right. Both compound, 3 inches above ankle.	5½ months.	7 weeks.	Wound healed, 3 weeks. Two and one-half mos. springy union. Five months solid.	2 years.	Not as good as before accident. Ankle weak and painful.
17	Male. 19.	Both bones. Tibia 3 and 6 inches above ankle.		4 weeks.	Springy 6 weeks, firm 8 weeks.	2 years.	As good as before accident. Pain in leg.

TABLE V. (Continued.)

No.	Sex. Age.	Injury.	Duration of Treatment.	Time Spent in Hospital.	Time of Union.	Time Elapsed Since Accident.	Present Condition.
18	Male. 20.	Inner malleolus.	6 weeks +.	2 weeks +.		8 years, 3 months.	Not as good as before accident. Weak after long standing. Pain in damp weather. No limp.
19	Male. 26.	Left. Compound, tibia, upper one-third transverse.	6 weeks.	9 weeks.		10 years.	As good as before accident.
20	Male. 6.	Left tibia 2 inches above ankle, transverse.	4 weeks.	5 weeks.	5 weeks.	4 years, 6 months.	As good as before accident.
21	Male. Boy.	Both. Junction lower and middle one-third, transverse.	8 weeks.	10 days.	3½ weeks.	3 years.	As good as before accident.
22	Male. 6.	Right tibia, 3 inches from tubercle, oblique.		10 days.	7 weeks.	3 years.	As good as before accident.
23	Male. 7.	Right compound. Both 2 inches above ankle, oblique.	12 weeks.	8 weeks.	3 weeks. Wound healed 8 weeks.	8 years, 7 months.	Not as good as before accident. When walking painful.
24	Male. 42.	Right tibia, 1½ inches below knee.	4 months.	4 weeks.		3 years.	As good as before accident, but stiff a little. Motion normal.
25	Male. 28.	Pott's. Left lateral ligament.	5 weeks.	1 week.		3 years.	Ambulatory treatment used. As good as before accident, excepting that it sometimes swells with rheumatism.
26	Male. Adult. Old.	Right fibula, 1½ inches above knee.				4 years, 6 months.	Stepping on uneven surface trouble. some; soreness and lameness. (Left femur too compound.)
27	Male. 34.	Right. Both 1 inch above ankle; 4½ inches above ankle.		4 months	3 months +.	1 year, 5 months.	Not as good as before accident. Foot turns in; swelling leg. Not strong. Thrombosis of veins. Left leg weak too. Heart is weak. Cannot bear weight on foot.
28	Male. Adult.	Both. Right, junction middle and upper one-third.	2 months.	11 days.	6 weeks.	3 years, 8 months.	Pain, refracture 6 months later.
29	Female. 60.	Left. Both compound. Lower 2 inches above ankle. Foot backward.	3 months.	4 weeks.		3 years.	Not as good as before accident. Crooked. Motion of ankle limited. Walked in 4 months. Foot swollen.
30	Male. Adult.	Right. Both compound comminuted, junction lower and middle one-third.	18 months in splint.	12 weeks.	12 weeks. Union soft. Wounds healed.	5 years.	Not as good as before accident. Post-tibial nerve torn out. Ankle limited in motion. Cramps in leg. Useful foot and leg.
31	Female. Adult.	Left. Both compound, 2½ inches above ankle.	4 months.	6 weeks.		3 years.	Not as good as before accident. One-fourth motion present. Lame. Septic bone removed.
32	Male. 33.	Left. Pott's.		5 weeks.		1 year, 8 months.	Not as good as before accident. Numbness in sole of foot. Pain in foot when first up and about. Some limp. Talipes equinus. Ankle broad. One and one-fourth inches shortening of leg.
33	Female. 78.	Right tibia, middle.	2 months.	6 weeks.	5 weeks.	5 years.	Not as good as before accident.
34	Female. 59.	Both. Lower one-third.	10 weeks.	4 weeks.	3 weeks +.	4 years, 2 months.	Not as good as before accident. Aches and pains and feels sore at times.
35	Male. 22.	Both. Below middle, oblique.		6 days.	5 weeks.	2 years.	As good as before accident. Some pain in cold weather.

TABLE VI.

A SERIES OF WIRED FRACTURES. RESULTS STATED.

No.	Age. Sex.	Injury.	Treatment.	Time Spent in Hospital.	Time Elapsed since Operation.	Present Condition.
1	Male. Adult.	*Jaw.* — Fractured symphysis and body half-way to angle.	Symphysis wired. Operator, S. J. Mixter.		5 years, 4 months.	As good as before accident.
2	Male. 12.	*Jaw.* — Fractured body.	Wired. Periosteum sutured. Operator, W. M. Conant.	4 weeks.	3 years, 6 months.	Not as good as before accident. Troubles in eating.
3	Male. 19.	*Clavicle.* — Almost compound; small wedged-in piece.	Wired. Four weeks bandaged. Operator, S. J. Mixter.	3 weeks +.	1 year, 4 months.	Not quite as good as before accident. Cannot put hand above head as well.
4	Male. Adult.	*Humerus.* — Ununited and musculospiral paralysis.	Broken, 1893, united. December, 1893, no union. 1895, wired, musculo-culospiral sutured. 1899, wired. Operator, M. H. Richardson.		9 months.	No union. Musculospiral paralyzed.

TABLE VI. (Continued.)

No.	Sex. Age.	Injury.	Treatment.	Time Spent in Hospital.	Time Elapsed Since Operation.	Present Condition.
5	Male. 10.	*Humerus.*—Compound left, low down.	Wired. Operator, H. H. A. Beach.		10 months.	Left humerus, some shortening. Flexion limited about one-half. Extension normal. Greenstick deformity. Slight atrophy of forearm. Slight atrophy of upper arm. Not as good as before accident.
6	Male. 36.	*Forearm.*—Ununited ulna, 5 months; 3 inches below olecranon.	Wired. Eight weeks in splint. Operator, H. H. A. Beach.	4 weeks.	1 year.	Not as good as before accident. Cannot turn wrist as before. Tired quickly.
7	Female. 40.	*Femur.*—United 15 months; anterior and exterior swing; 3 inches short, right.	Wired. Twelve weeks +. Operator, J. C. Warren.	3 months.	5 years, 11 months.	Not as good as before accident. Knee is stiff and painful. Leg is 1½ inches shorter.
8	Male. 36.	*Femur.*—Wired. Ununited.	Wired. Thirteen weeks. Operator, J. W. Elliot.		1 year, 6 months.	Not as good as before accident. Stiff knee and weak. Foot inverted. Right calf, ½ inch atrophy. Knee flexion to right angle.
9	Male. 30.	*Femur.*—Middle. Ununited and deformity, 3 months; ¾ inch shortening. Knee feels stiff.	Wired. Operator, C. B. Porter.		1 year, 11 months.	Not as good as before accident. Stiff knee. Not as strong. Slight limp. Right 1½ inches shortening. No deformity. Slight limitation of flexion.
10	Male. 25.	*Femur.*—Left. Compound. Lower third splintered.	Wired. Operator, C. L. Scudder.	6 weeks.	3 years, 11 months.	No limp. Left 1 inch shorter. Left thigh, 1 inch atrophy. Left calf, ½ inch atrophy. Very slight limitation of flexion in left knee. Slight hyperextension in left knee. Lowering of left ankle arch. Went to work too soon.
11	Male. 48.	*Femur.*—Supracondyloid fracture.	Wired.	6 weeks.	4 years, 6 months.	Perfect.
12	Male. 53.	*Legs.*—Both compound. Right compound comminuted, oblique 5 inches above ankle. Left compound 5 inches above ankle. Kicked.	Wired. Right, when 12 days old. Left, when 1 year old.		Right, 1 year, 8 months. Left, 7 months.	Right, anterior and posterior deformity; solid. Not as strong. Flexion limited one-half. Left, slight motion. Uses crutches. Splints on left leg.
13	Male. 65.	Compound comminuted of both bones. Kick 3½ inches above joint.	Wired. Three months.	9 weeks.	11 months.	Not as good as before accident. Bone (8 pieces) out. Local pain and swelling of leg. Two-inch increase in size of calf. Gets about with difficulty.
14	Male. 50.	*Leg.*—Ununited, 6 months.	Wired Three-quarters inch shortening. Ten months in cast. Operator, S. J. Mixter.	4 weeks.	1 year, 4 months.	Leg perfect. Foot troubles much.
15	Male. 56.	*Leg.*—Both bones 5½ inches from tuberosity of tibia; backward bowing of tibia.	Nine weeks. Operator, M. H. Richardson.	2 weeks.	2 years.	Not as well as before accident. Gathers and breaks down.
16	Female. 18.	Compound of both bones 4 inches above malleolus.	Operator, C. B. Porter.		4 years, 11 months.	Some deformity. Pain. Swelling.

(Continued from page 321.)

orly. This time the patient sat erect and the fluid was of the same kind as before — blood, but dark blood — and it flowed freely until about thirty-nine ounces had been withdrawn. As this aspiration was nearing the end, the patient experienced great pain and became conscious of a fresh invasion of the pleural space with air. From the position of my needle, below the level of the fluid, I am sure I did not puncture the lung, nor was any air aspirated from the pleural cavity. I finished the operation at once, as the patient was near fainting, occluded the needle puncture, and on percussion confirmed what he had felt, that though the bulk of fluid had been withdrawn, the pleural cavity was as full of air as on the first examination; about seventy-three ounces in all was withdrawn. The patient soon rallied and the air seemed to give him less pain and discomfort than at first. There was also some temporary recurrence of the effused blood, but no further aspiration was deemed necessary, as the general condition of the man improved rapidly, and tonics, open-air life and extra nourishment seemed to be all that was needed further.

Three or four weeks after the last aspiration he went on a vacation to Nova Scotia, and a few weeks on a farm seemed to advance him very much. When he returned about October 1st, I found the lung had expanded and advanced almost to its original limits. He had gained from 135 pounds after the last aspiration, to 146 pounds, and felt so well he resumed his old position after an absence in all of eleven weeks. There are still some pains in the chest on making certain motions, but these are not made worse by his working up to the present time. I believe he has fully recovered.

The aspirated blood was liquid and remained free from coagulation after exposure to the air. It was about as dark as menstrual blood; was free from odor and remained homogeneous after standing in column. Under the microscope it was neither more nor less than blood. As far as I could estimate there was the usual ratio of red and white corpuscles. I regret that no exact blood count and no bacteriological tests were made. That there was some ordinary pleuritic fluid mixed with it I can neither affirm nor deny, but if present, it was in relatively small amount.

At the risk of being tedious I have gone into these details because of the rarity of this condition, as a

primary affection. Dr. Herbert B. Whitney, in the "Twentieth Century Practice," says it never occurs as a primary condition. So, too, says Dr. Frank Donaldson in "Pepper's System of Medicine," 1885.

The few writers whom I have been able to look up agree in stating it is always subsequent to trauma, aneurism, tuberculosis or other gross disease in contiguous structures. They say further, and truly no doubt, that the prognosis is always bad. Pagenstecher has demonstrated that the pleural cavity has the power of preventing coagulation of blood injected aseptically therein, that it is readily absorbed therefrom and that its presence therein does not excite pleurisy. This case bears him out.

I have called this idiopathic pneumohematothorax, and to all appearances it was so in that there was no objective or subjective evidence of pre-existing trouble. How then can we explain the sudden ingress of air and more gradually of blood afterward into the pleural cavity? Possibly at some time before he had had an adhesive pleurisy with an unusual vascular development in the adventitious tissue. His stretching that evening might have torn away some bronchial terminal, together with some small veins, and so opened the way for both air and blood at the point designated when the amphoric sounds were heard, a hypothesis similar to that accepted to explain non-traumatic subdural hemorrhages, barring the air element in the case of the pleura. A certain writer whom I cannot name has said that air in the terminal pulmonary vesicles is, aside from tubercular bacilli, practically sterile. If this is correct it would explain the non-infection of the pleural cavity and contents by the large volume of air with which it was twice distended. I believe he would have recovered without aspiration, though possibly it may have hastened the recovery. In any clinically similar case, where sepsis is not manifest, aspiration ought to be tried before resorting to any more radical measure, for some empyemas recover after aspiration. This case suggests: (1) We can have (practically) a primary pneumohemothorax; (2) that without diagnostic aspiration we cannot be sure of the nature of any pleural effusion; (3) that aspiration may precipitate an influx of air into the pleural cavity even if the lung is not touched by the needle; (4) that the pleural cavity can unaided take care of aseptic blood as well as of air.

Clinical Department.

BRADYCARDIA, WITH INTERMITTENT ALBUMINURIA.[1]

BY ANDREW H. WHITRIDGE, M.D., BALTIMORE, MD.

Patient came to the dispensary complaining of shortness of breath. Family history good; no tuberculosis, Bright's disease, or heart trouble. Personal history: Had measles, whooping-cough in youth, typhoid fever in fall of 1894; no complications. Had one attack of rheumatism; both knees were swollen, inflamed, and painful. He uses tobacco, smokes and chews. Drinks whiskey to excess, using half-pint daily, often getting on a spree. Had gonorrhea six times; denies lues. Was operated upon three times; in the first and in second operation ether was used. No albumin was found in urine before or after operation. Heart normal; pulse normal, 70 to the minute. Last operation, November 23, 1898, was for lipoma of the neck in the cervical region on the right side; cocaine was used. Incision five inches long between the sternocleido and trapezius muscles. The vagus was not exposed during the operation. The urine on admission, November 23, 1899, had albumin and fatty casts in it. Four days after the last operation no casts or albumin were found in the urine. Pulse then 70 to the minute. This is the last record of his pulse and urine until his admission to the dispensary, February 11, 1900.

Patient passes large quantities of urine during the day and is obliged to urinate frequently during the night, when he passes large quantities of urine. Has noticed occasionally in the past two months some puffiness under the eyes in the morning; has no nocturnal cramps in muscles of the legs, no swelling of the legs.

Present illness.— Three months ago patient noticed while going upstairs some shortness of breath; no dizziness or palpitation, and never lost consciousness. Accidentally at this time patient counted his pulse, and noticed for the first time it was 32 to the minute at the radial. Since then, two months ago, he has frequently counted his pulse and never noticed it above 32. He has no paralysis of the muscles and feels as strong and well as ever, with the exception of slight shortness of breath on exertion.

Physical examination. — Patient is an exceedingly intelligent man, not drowsy or in any way stupid. He is sixty years of age, of large frame and well developed. Skin anemic, but not waxy in appearance. Some puffiness under the eyes. Eyes react readily to light and accommodation. Pupils equal. Pulse good volume, increased tension, regular in force and rhythm, not compressible; at the radial 32 per minute. Heart's action at the apex is also 32 per minute. The pulse is therefore synchronous with the heart's action. Lungs negative on auscultation and percussion. Heart point of maximum impulse not palpable or visible, but determined by auscultation to be in the fifth interspace, 11 centimetres in the mid-sternal line within nipple line. Here both sounds are audible, first followed by soft systolic murmur, transmitted outward into the axilla. This murmur is not heard over the body of the heart. Aortic and pulmonic area is clear; no murmurs; both sounds well heard. Area relative to cardiac dulness begins at the upper border of the third rib and extends four centimetres to the right of the mid-sternal line. Spleen not palpable. Liver edge can just be felt below costal margin. Pulse 32 to the minute. Vessel wall distinctly thickened and can be rolled on the finger. Urine when first examined was voided just before patient had retired on the night previous to admission to dispensary. Was of a dark amber color, cloudy, and had a heavy white granular sediment. By Heller's test the most pronounced ring was observed; also albumin was demonstrated. Centrifugalizing specimen of urine, hyaline and coarsely granular casts were found; no sugar.

Two days after this first admission, February 13, 1900, patient returned. Pulse 32 to the minute, regular; heart's action regular, 32 at the apex. Specimen of urine voided at 7 A. M., just as he got up out of bed, was light amber color, clear; specific gravity,

[1] From the Dispensary of Johns Hopkins Hospital.

1.020; mucous sediment; no albumin was present nor any casts; no sugar.

Being rather confused in my mind, since I had informed the patient two days previously that he had a contracted kidney, made him void a second specimen, which he did at 11 A.M., four hours after the first. Since the first and second specimens, patient had his breakfast and walked to the dispensary. Second specimen showed a dark, amber-colored urine, cloudy, heavy white sediment. Specific gravity could not be determined — too small amount. Large amount of albumin by heat and nitric-acid tests; no sugar.

This case is of interest, for there are four etiological factors that can cause this bradycardia. As this patient has arteriosclerosis, occlusion of the coronary arteries may play an important rôle in the slow pulse, due to failure of nutrition of the muscles of the heart.[2] Patient's heart is also enlarged to some extent, but the sounds are well heard at the apex and over the base of the heart. Pulse is regular, good volume and tension. Myocardial changes are often cause of slow pulse and must be thought of in this case as one factor.[3] Bright's disease or any wasting disease is the most important of all these etiological factors.

The last factor in the cause of his bradycardia is the irritation caused by the removal of the lipoma of the neck, causing stimulus to vagus nerve. Dr. Thomas Clifford Allbutt, in his excellent "System of Medicine," in his article on functional disorders of the heart, refers to irritation of vagi as a probable cause of slow pulse in children. Why is it not possible, owing to the extent of the operation which was done by subcutaneus injections of cocaine in the cervical region, that a part of a nerve is caught in the scar and reflex irritation is causing slow pulse?

On reviewing the etiological facts of the case, I think myocardial changes can be excluded on account of the pulse, which is regular in force and rhythm, of good volume and tension, not easily compressible. The heart sounds are loud and regular, not intermittent, and heard distinctly in the aortic pulmonic areas. The area of cardiac dulness is increased to some extent to the right of the mid-sternal line.

This case is of interest, for there is a period of permanent bradycardia of three months, with intermittent albuminuria of over two years' duration.

Medical Progress.

PROGRESS IN PUBLIC HYGIENE.

BY SAMUEL W. ABBOTT, M.D., BOSTON.

"Public money is never more advantageously spent than in promoting and preserving the public health, an inestimable asset of the Commonwealth."— SIR WALTER FOSTER, M.P., in an address at the opening of a new isolation hospital at Enfield, Eng., in February, 1900.

THE MANAGEMENT AND CONTROL OF INFECTIOUS DISEASES.

A Contribution to the Study of Epidemic Diarrhea.[1]

UNDER the foregoing title, Dr. Newsholme contributes an excellent paper upon the subject of "Epidemic Diarrhea," illustrated with diagrams and a brief statement of the prevalence in the disease in the principal cities of Great Britain for a series of years. As a result of these investigations, the author concludes:

(1) That epidemic diarrhea is chiefly a disease of urban life, but not necessarily bearing any relation to density of population (as measured by the number of persons per acre).

(2) As a fatal disease, it is a disease of the artisan, and still more of the lower laboring classes to a preponderant extent.

(3) Towns which have adopted the water-carriage system of sewage disposal, have, as a rule, much less diarrhea than those which retain other methods of removal of excrement.

(4) Towns with the most perfect scavenging arrangements have the least epidemic diarrhea.

(5) *Influence of soil.* — In houses having a solid rock foundation, with little or no superincumbent loose material, the diarrheal mortality is low, probably because polluting fecal and other organic impurities do not cling to or soak into such soils. On the other hand, over a loose soil, the diarrheal mortality is apt to be high.

(6) Given two towns equally placed, so far as social and sanitary conditions are concerned, their relative diarrheal mortality is proportional to the height of the temperature and the deficiency of rainfall in each town, particularly the temperature and rainfall of the third quarter of the year.

The fundamental condition favoring epidemic diarrhea is an unclean soil, the particulate poison from which infects the air, and is swallowed most commonly with food, especially milk. In other words, epidemic diarrhea is like typhoid fever, a "filth disease."

The author accounts for his omission of any reference to milk as a cause by the following pertinent statement: Milk is not the actual cause of diarrhea. It is a vehicle of infection, just as mosquitoes are a vehicle of malaria, or rats of plague; and our ultimate research ought to be directed towards elimination — if it be practicable — of the actual conditions under which the contagia of these diseases are able to live. If we throw further light on these primal causes, we are in a better position to attack the vehicles of infection, and, failing removal of the primal causes, we can then to the best advantage break the chain of causation at a point nearer the sufferer. If A = the favoring climatic conditions, in the absence of which the contagium of diarrhea does not multiply, B = the domestic and municipal cleanliness (removal and prevention of organic dust), which prevents the accumulation of this contagium, and C = the milk to which this contagium gains access, and along with which it enters the alimentary canal, B and C are evidently the factors of causation which we can hope most successfully to combat.

The Prevention of Tuberculosis.[2]

"In the first place, there can be no doubt that phthisis should be made a notifiable disease (as has been done already in South Australia). No other form of tuberculosis should be notifiable, and the register should be declared confidential as regards names. Next, the

[2] Whittaker: Twentieth Century Practice of Medicine.
[3] Osler: Lancet, February 27, 1897.

[1] Public Health, London, December, 1899, p. 139.

[2] On the Guidance of Public Effort Toward the Prevention of Consumption, by J. Ashburton Thompson, M.D., Ph.D., New South Wales. Public Health, January, 1900, p. 248. See also article on The Compulsory Notification of Phthisis, by Bramwell, in the Medical Magazine, June, 1899, p. 515; also other papers on the same subject in the same journal in July, 1899.

State should provide for the free bacteriological examination of sputa, and this also should be a strictly confidential transaction between medical men and the central health authority. Thirdly, it should make the disinfection of rooms from which consumptives have been removed, or in which they have died, before they are reoccupied by any other person, obligatory on owners and occupiers of houses, and should require such disinfection to be done to the satisfaction of a legally qualified practitioner of medicine, who should be required to certify it in writing. Fourthly, district registrars should be required to notify every death from phthisis as soon as registered by them. Fifthly, good building laws should be enacted, and steadily enforced. Much beyond that I do not think the State should go, at all events at first, but the central health authority should forward by post some brief pamphlets of instructions to the persons whose names are notified to it. That, I dare say, seems to some little enough for a government to do. But it contains what is essential. It furnishes the means of learning what the number of sufferers is, and the facts as to incidence of the disease on classes, occupations and localities, and this knowledge is the indispensable foundation of practical measures of prevention. In order to remove the all-important secondary causes of consumption most expeditiously and most economically the faulty spots must be identified, and occurrence of cases of the disease furnishes the best index to them.

"Try to imagine for a moment a police charged to control unruly characters, but entirely ignorant of their appearance, habits, haunts and journeyings. It is scarcely possible to do so. Yet that is the position of most States in relation to living consumptives among the population. The information furnished by a well-ordered scheme of notification, after being carefully compiled, abstracted and charted, would in a few years furnish the requisite guide to effective action, and by being communicated to the public, would gradually render effective action more completely possible."

Tuberculosis among Cattle and Children.[3]

In an excellent paper upon this subject Dr. Scurfield makes the following suggestions that the Government should enact:

(1) That injections of tuberculin be only made by duly qualified veterinary surgeons. (2) That every veterinary surgeon who employs the tuberculin test be bound under a penalty to brand every animal that reacts. (3) That the tuberculin, and the services of a veterinary surgeon to perform the test, be offered free of charge to any farmer or breeder who will agree to isolate the sound from the reacting animals, and that compensation be paid for any of the branded reacting animals, which, on being slaughtered within a reasonable time — say one year — is found to be unfit for food. (4) That the sale of branded animals, except for slaughter, be prohibited. (5) That any obviously tuberculous animals found among the stock on the arrival of the veterinary surgeon to perform the testing be slaughtered without compensation, except in cases of failure of diagnosis. (6) That any butcher buying a branded animal be obliged to apply to the meat inspector of his district for the purpose of ascertaining whether the carcase is fit for food, and what organs require to be destroyed, condemnation to be meted out on the lines laid down by the last Royal Commission. The duties of meat inspector would naturally fall to the veterinary surgeon appointed for the purpose of the Contagious Diseases (Animals) Acts. (7) That the milk of the branded cows be not sold for human consumption unless an arrangement be made for their periodical inspection by a veterinary surgeon, to ascertain that the udders are free from disease. (8) That local authorities be empowered to compel the slaughter of cows suffering from tuberculous disease of the udder, or advanced tuberculosis, compensation only to be paid in the case of wrong diagnosis and animals branded under Enactment 2. (9) That the local veterinary surgeons carrying out the provisions of the Contagious Diseases (Animals) Acts be appointed to carry out these enactments. Part of the extra salaries required could be obtained by doing away with the travelling inspectors of the Board of Agriculture, who, without any technical training, go about the country in case of swine fever outbreaks, etc., to perform work which could be much more efficiently and promptly done by local veterinary surgeons. The local veterinary surgeons would thus be practically veterinary medical officers of health. In France there is, I believe, such a veterinary health officer in each district. (10) That after the lapse of, say, five years from these enactments becoming law, (*a*) no compensation for condemned carcases be given; (*b*) the sale of milk from any tuberculous cow be forbidden, and local authorities be empowered to use the tuberculin test, any animal reacting to the test to be isolated and fattened for the butcher as quickly as possible without compensation; and (*c*) all cattle be sold with an implied warranty that they are free from tuberculosis.

The Tuberculin Test in Cattle.[4]

The value of this test is well illustrated in the account given by Prof. J. M'Fadyean, of the Royal Veterinary College, of the results of its application to a herd of dairy cattle on her Majesty's home farm at Windsor. The herd numbered 40 animals, all of which were apparently healthy and in good condition. The premises in which they were kept are "probably the best in the kingdom from the point of view of cubic space, light and ventilation." After inoculation with tuberculin, 34 animals gave a definite temperature reaction, the temperature rising within fifteen hours from the normal to about 102° F. or higher; in two animals the temperature reaction was held to be doubtful, the rise reaching 103.6° F. in one case, and 103.8° in the other; in the remaining four animals no temperature disturbance was observed. In view of these results, it was decided to slaughter the whole herd, and a very careful post-mortem examination was made in case of each animal, exact details of which are given. Of the 34 animals which gave a definite temperature reaction, 33 were found to be undoubtedly tuberculous; in the remaining cow no anatomical evidence of tuberculosis was found, but the uterus was in an unhealthy and inflamed condition. Tubercular lesions of limited extent were found in each of the two animals in which the temperature reaction did not quite reach 104° F. Of the remaining four animals, in which no temperature disturbance had occurred,

[3] On the Use of Tuberculin for Lessening the Prevalence of Tuberculosis among Cattle and Children. Is this a Matter for Government Interference? By Harold Scurfield, M.D. Public Health, October, 1898, p. 39. See also paper by Meredith Young on the same subject. Public Health, June, 1899, p. 612.

[4] Journal of Comparative Pathology, 1899, Vol. xii, Part I.

three were apparently free from tubercular disease, whilst the fourth showed in a mediastinal gland a caseous nodule about the size of a pea, which contained fairly numerous tubercular bacilli.

The Discovery of Typhoid Fever Bacillus in Well Water.

Dr. Kübler and Dr. F. Neufeld[5] were called upon in the month of June, 1898, to examine three samples of water which were regarded as likely to be infected with typhoid germs. They were obtained from three different places in a farmstead, situated in an isolated village of the district of Neumark. In two cases the test furnished negative results; but from some of the gelatine plates cast from the third sample, described as "well water," some pure cultures of a rod-shaped freely-moving bacillus were obtained, which when compared with pure cultivations of genuine typhoid-fever bacilli corresponded in every particular. The various tests are described; but the one regarded by the authors as decisive was that of Pfeiffer, carried out upon guinea-pigs, using serum having strong powers of conferring immunity. About four weeks later a second sample from the same well again yielded cultures, which, in respect of appearance, mobility and behavior under chemical and other tests when compared with genuine typhoid bacilli, corresponded in every particular; but when injected into living animals (guinea-pigs) the bacilli proved to be non-pathogenic, and as the authors point out, may well, during the interval, have lost or diminished in virulence. It is probable, looking to the facts of the case, that this may be the first occasion on which it has been possible to demonstrate the presence of typhoid germs in drinking-water with absolute certainty. Though infected water has often been examined before, the investigations have generally been undertaken too long after the introduction into it of the germs, and therefore, as would appear from this case, after the germs had disappeared or had parted with their virulence. The history of the outbreak is given; the total number of cases was only 13, and from the facts recorded by the authors it is probable that the germs were conveyed into the well by the urine of the first patient having percolated through the subsoil. After the use of the well water had been prohibited, a stranger passing by, who knew nothing of the outbreak and had no contact with any of the inhabitants, drank some of the infected water and sickened with typhoid fever on the 11th of June.

Rabies; German Laws for its Prevention.[6]

A brief summary of the German laws for the prevention of rabies presents the following principal features:

The law of August 8, 1835, states the importance of restricting hydrophobia by diminishing the number of dogs. § 93: Requires the destruction of all mad dogs. If a dog has even the slightest symptoms of madness he must be killed, even though he has bitten no one. § 94: Requires notification of the police. § 95: If a dog has bitten any one, a physician must be called, and the dog must be tied up and placed under observation, to ascertain whether he is mad or not. § 97: This section deals with the burial of the bodies of dogs. § 98: Disinfection of the objects touched by the mad dog, and their destruction, if necessary. § 99: Requires immediate killing of every dog bitten by a mad dog, even when the fact of biting is not fully established. § 100: Mad dogs, and dogs bitten by them are not to be treated by laymen, and veterinarians may only attempt a cure by permission of the police. § 101: Mad cats, foxes and wolves are also to be killed. § 102: Deals with the treatment of horses, cattle and other domestic animals when bitten. § 103: Such animals not to be slaughtered for food. § 104: Requires the killing of such animals if they become mad. § 105: Their burial. § 106: Disinfection of stables and other objects with which the mad animals may have come in contact. § 107: Rules concerning the appearance of hydrophobia in men. § 108: Disinfection of articles which have come in contact with sick men.

By the law of July 2, 1856, all dogs must be provided with nose muzzles in the open streets. Dogs without muzzles are killed and their owners punished. A dog may be recovered on payment of a definite fee. In Düsseldorf, if rabies appears, all dogs must be tied, or led with a leash, or supplied with muzzles, and those without masters must be shot.

By Section 10 of the imperial law of 1880, concerning cattle diseases, hydrophobia is classed among such diseases, and its notification is made compulsory.

Section 38 prescribes a danger period of three months, during which all dogs in a district must be kept tied. The district includes all places where the infected dog has been seen, and all other places within a distance of four kilometres (two and one-half miles). This regulation is in force when a sick or suspicious dog has been running loose.

Section 39. The cadavers of dead animals must be rendered innocuous at once, and must not be skinned.

Malaria in the Province of Rome.

Prof. S. Santori's[7] object in writing this paper was (1) to ascertain the monthly prevalence of malarial fever in the province of Rome for the period in question; (2) to find its relation, if any, to the rainfall; (3) to illustrate its distribution upon a map of the province. A series of charts is presented showing for each district the rainfall of each ten-day period and the prevalence of intermittent and pernicious fever.

The results of these observations show: (1) Two distinct periods, an endemic period from January to the first ten days of July, and an epidemic period for the remainder of the year from that time until December; (2) in the endemic period the disease is mild in character, the cases few in number, and its course is uniform or regular; (3) an epidemic in spring is almost unknown; (4) the epidemic period always begins suddenly after the first ten-day period of July. It appears to bear no relation to climatic phenomena nor to other hitherto known factors; (5) the severity of the epidemic may have relation to the same factors; (6) the rainfall of August and September has no influence upon the development of the primary fever, and has effect only upon the recurrent form.

Isolation Hospitals in England.

The principle of hospital isolation for infectious diseases has reached its highest development in England, where there are now several hundred of these useful establishments. Sir Walter Foster, M.P., in an address at the opening of a new hospital of this character in Enfield, Eng., stated that "the local debt

[5] Zeitschrift für Hygiene, vol. xxxi, 1899, p. 133.
[6] Vierteljahrsschrift f. öff. Gesund., xxxi, 4, 2, p. 774.
[7] La Malaria nella Provincia di Roma (1888-97): sua ripartizione nei Communi e suoi Rapporti con la pioggia Caduta. Annali d'Igiene Sperimentale, ix, 3, 1899, p. 354.

of the country is £252,000,000. Of this amount £1,500,000 have been expended in affording hospital accommodation. In 1898, 20,849 cases of infectious diseases were admitted to hospitals, and whereas in 1890 only 33½ per cent. of infectious diseases could be isolated, in 1898 the percentage was doubled. Further, with enlarged isolation accommodation, mortality from scarlet fever and diphtheria, especially, was greatly diminished. The last twelve years saw the former reduced one-half, and the latter yet more diminished." [2]

(To be continued.)

Reports of Societies.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

A. K. STONE, M.D., SECRETARY.

Regular meeting Monday, December 18, 1899, Dr. R. H. Fitz in the chair.

Dr. William A. Morrison showed a man who by diet and training had reduced his weight from four hundred and ten pounds to two hundred pounds.

Dr. DeBlois: I have found that I can get rid of fifteen pounds at any time. Any of these things, such as iodides, alternating salts, extract of thyroid, etc., will reduce from fifteen to twenty pounds and there the reduction will stop. I follow a partial diet, take no sugar, use saccharine instead, use no milk in tea or coffee. I take cauliflower, Brussels sprouts, squash and all those things that I dislike very much indeed; on the contrary I am very fond of potatoes and rice. I was brought up on rice — never took a meal without rice in some form. I take as little as I can, and take what exercise I can, but leading a sedentary life it is difficult to take sufficient exercise. We know the Turkish bath is of no benefit, because you take on in the plunge what you lose by perspiration in the hot room.

ANATOMICAL SPECIMENS.

Dr. Tenney: The first of these is simply an anatomical specimen, the arch of an aorta where the two carotids are first given off from a common trunk. The next branch is the left subclavian. The third branch is the right subclavian, which passed round behind the esophagus and trachea, and then off on the right side, as in the usual course.

The second specimen is a heart which it seems to me is rather interesting in connection with what we hear of functional murmurs, a heart with an open foramen ovale, and yet the opening is closed by a valve, fairly competent. Dr. Councilman says they are not uncommon. He thinks he finds an opening of this sort in about 10 per cent. of the cases. Dr. Magrath has records of 240 autopsies, and says he has seen only four. In my dissecting-room experience, I never before have seen one so large. It easily admits the whole handle of the forceps and will almost admit the little finger.

The next two specimens are interesting. The first shows a male bladder, with an enlarged middle lobe in the prostate; in fact, two or three little lobes which can drop down and produce a valvular action. When put on the stretch the trabeculæ show strongly. The dilatation had gone on until the urachus itself had become somewhat opened up.

In direct contrast with this bladder and of decidedly another type is one here which is sacculated. The bladder is otherwise normal. The fact that the sacculation was not produced by stricture is proved by a cast of the urethra. The sac opens on the right wall of the bladder about half-way up. Its capacity is nearly an ounce.

Dr. E. S. Boland showed a case of

IDIOPATHIC PNEUMOHEMATOTHORAX [1]

which was cured by aspiration.

Dr. Vickery: I have listened with great interest to the report of Dr. Boland. There are two things I would like to speak about: One is about the etiology of such a case as this. Perhaps it comes down to a merely verbal difference, but I myself would have thought likely that this attack was secondary to adhesions, which in their turn were the result of a tubercular process which the patient might have had years before, attaching a small portion of the lung to the parietal pleura. While he did not have any active disease, he had this pathological adhesion, and then the strain of his work broke it apart. Secondly, about treatment in such a case, one reason we thought best to delay aspiration was that it was very evident there had been an unnatural opening and that early aspiration might tend to reopen that place if it were beginning to close, hence if there were no great distress or signs of sepsis, it seemed wiser to wait two or three weeks so as to fortify the lung against the strain which aspiration would bring upon it.

Dr. F. C. Shattuck: This is a very interesting case. I have never seen one exactly like it. I have seen two cases that might be called primary pneumothorax, both of them absolutely dry. One was a maid servant in a house where I was visiting a patient. I was told that she seemed to be short of breath. On examining her chest, to my surprise I found one side of the chest was absolutely full of air and the lung compressed, and yet she was about the house attending to her work. She had no cough and could not fix the time when this came on. It evidently had come on gradually. In Dr. Boland's case the man was well one day and taken in the night, and, therefore, could fix the time at which it occurred. I tapped the chest several times, drawing off the air under water. There never was any fluid at all. She recovered.

Another patient was sent to me from Springfield with the diagnosis of aneurism, and he had a pneumothorax — one chest entirely full of air; nor could he fix the moment at which the rupture occurred. The escape of air must have been gradual in his case also. He had had a tremendous cough and I always supposed that the origin of the pneumothorax was rupture as result of this violent cough. There had been a small tear with valvular opening and a little air kept escaping until the chest was full. He came down to the hospital under my care and I tapped him, allowing the air to escape under water. He has recovered perfectly. I have seen him since and he is perfectly well.

Dr. Samuel West, of London, if I remember aright, reported a number of cases, not a large number abso-

[2] The Sanitary Record, February 16, 1900, p. 142.

[1] See page 321 of the Journal.

lutely, a large number relatively, because it is a rare affection, of what he called idiopathic pneumothorax. I think the presumption always is that in default of trauma — and I suppose my second case can be classed as trauma because the man had a violent cough — there is probably a tubercular process in the background.

DR. MORSE: In the last few weeks I have been over the records of the City Hospital and looked up all the cases of pneumothorax in the last eighteen years. Leaving out the comparatively small number of cases due to trauma and to acute processes, like abscess or gangrene of the lung, certainly the very vast majority of the cases were due to tuberculosis. As yet I have not been able to follow up all the cases that left the hospital relieved, but every one that I have been able to follow up is now dead. Practically all of those that died in the hospital, and some not proved to be tubercular by autopsy, had tubercle bacilli in their sputum or a well-marked history of tuberculosis. This has made me feel very strongly that pneumothorax not due to trauma or acute processes is due to tuberculosis. A point that struck me in the histories of these cases was in how large a proportion of them the pneumothorax came on insidiously, the patient not being able to state when the perforation occurred. I should say more cases came on insidiously than acutely.

DR. FITZ: My impression is that blood which is poured into the thorax — that is pure blood — is likely to clot. In Dr. Boland's case it seemed to me probable that there was a certain amount of extravasated blood mixed with so much fluid as to prevent the formation of a firm clot; the fluid is not likely to have contained abundant fibrin owing to the absence of a clot. I should agree with reference to the possibility of a tubercular basis for the hemothorax, not necessarily an extensive tuberculosis of the lung. The occupation, persistent cough, and sudden onset without violence are in favor of the view which Dr. Boland has presented that there might be some localized tubercular process in the lung, so small as not to give rise to characteristic symptoms or signs and yet sufficient to produce weakening of the surface of the lung. Such a lesion would not account for the associated hemorrhage unless there were also a small aneurism or thin-walled vessel involved in the rent. The return of the bleeding suggests the supervention of a hemorrhagic pleurisy corresponding to the hemorrhagic pachymeningitis so often associated with hematoma of the dura mater.

I recall a case of spontaneous or idiopathic pneumothorax which was in the hospital some time ago, the man being apparently in vigorous health at the time of its occurrence. Some slight muscular strain was followed by the sudden invasion of the pleural cavity with air. He recovered after a number of weeks. There was no pleurisy and there was no evidence of disease of the lung after the removal of the air had taken place.

DR. CHARLES F. WITHINGTON and DR. ROBERT W. LOVETT read a paper on

TYPHOID SPINE.[1]

DR. GRAHAM: The history of the first case interested me very much. In 1884 I laid down as a contraindication for massage, tonic muscular spasm, depending upon an acute irritation of spine, spinal cord, or anywhere else; and the use of massage early in this case certainly bore out that principle. What I was afraid of was that massage having proved of no value at this stage it would not be used again, for most people would naturally say it had been tried and had done no good. I was much pleased when the reader got to that part of his paper where Dr. Prince showed his good judgment by advising massage at a later stage and more appropriate time when there was impairment of motion and disturbed sensation in the absence of neurotic irritation.

DR. SHATTUCK: I should like to ask whether three milligrammes is his usual dose of tuberculin for diagnostic purposes?

DR. WITHINGTON: It is not. I am willing to admit that that was not a perfectly satisfactory test in this case. I am sorry that the amount given was not larger. It was given just before he went away with the expectation it might be repeated afterwards, using five to ten milligrammes. That was not done. It is not absolutely conclusive that he would not have reacted to a larger dose, though I have seen several cases that have reacted to three milligrammes and some to even less than that.

[1] See page 317 of the Journal.

SUFFOLK DISTRICT MEDICAL SOCIETY. SECTION FOR CLINICAL MEDICINE, PATHOLOGY AND HYGIENE.

J. BERGEN OGDEN, M.D., SECRETARY.

REGULAR meeting Wednesday, December 20, 1899, DR. C. B. PORTER in the chair.

DR. J. J. PUTNAM read a paper entitled

A CASE OF PERIODIC PALSY, WITH SUGGESTIONS AS TO THE PATHOGENESIS.

The patient was a young man of great muscular development, who had been subject ever since twelve years of age to attacks of paralysis of almost all the voluntary muscles, coming on usually during the night and passing off at the end of one or several days. During these attacks the patient is unable to move hand or foot, or even the head, and the electrical reaction of the muscles as indicated by the results of one examination is greatly diminished, probably, indeed, lost during the height of seizure, as in the case reported a year and a half ago by Dr. Taylor and in the others collected by him.

This disease has usually been considered as due to toxemia, but the reader advanced the view that an undue inhibitory action analogous to that which plays a part in normal life might be the cause. Thus it is nowadays maintained that the relaxation of the muscles in general is not simply a passive but an active, or, so to speak, an inhibitory, process and experiments were cited to show that electrical irritability may be arrested temporarily by influences of a similar character. It is true that some cause would have to be found for the increased inhibition itself, but it is simpler to assume that we have to deal in these cases with tissues having characteristics analogous to those met with in normal states than to assume an entirely new cause. Thus the question presents certain analogies to other conditions usually classified as neuroses, which are themselves best understood if regarded as caricatures of normal states.

Dr. Cleghorn: I suppose Dr. Putnam wishes me to speak from the physiological side of the case. What Dr. Putnam has said with regard to inhibition is very true, particularly the statement that we shall not know the nature of it until we know the nature of nerve force. The phenomena of inhibition can be shown to exist in the lowest form of life. If we take two poles of a battery, anode and cathode, and bring them into contact with an ameba, we find that when the anode comes in contact with the organism it will contract, and on the cathode side it will elongate. Inhibition in the body under normal circumstances has only about one or two really pure examples. The first and main one is of course the well-known action of the vagus nerve on the heart. A good deal of work has been done on the cortex of the brain, stimulation of which has given peculiar results pointing to inhibitory effects. For example, Bubnoff and Heidenhain found that when they threw a portion of the body into tonic contraction, by a subminimal electrical stimulus, a slight sensory stimulus applied to the contracted portion would immediately produce relaxation. That was only in some stages of anesthesia produced by morphia, however. Sherington has found that when he stimulated the motor areas of the cortex he produced not only a contraction of the muscles supplied from that area, but he also obtained an active relaxation of the antagonistic muscles. Gotch and Horsley have found that stimulation of the cortex gave rise to an electrical change in the spinal cord, and Ranke has shown that even reflex movements can be inhibited by passing a current through the cord in different ways. But Richet's work is probably the most interesting. He stimulated the cortex, producing a movement of a certain set of muscles; but if he applied another stimulus to the same spot on the cortex a certain time after the first one, he would have a decided inhibition, that is, the movement would be checked. If, on the contrary, he let a certain time elapse, about three-quarters of a minute, he would obtain an augmented contraction. His results were conclusive and seemed to point to the fact that a stimulus could have two different effects on contracting muscles. Direct stimulation, causing a contracted muscle to relax, has been done by Kaiser and some others. Fick has shown that when he had the abductor indicis muscles voluntarily contracting against a spring, the contraction being as complete as possible, the voluntary impulse being pushed to the extreme, when he electrically stimulated the muscle it directly relaxed. If the voluntary contraction was not a complete one when he applied the electrical stimulation, then the stimulation was added to the voluntary impulse and the force of the contraction was increased. These experiments point to the fact that similar stimuli may give rise to two entirely different effects, in one case causing contraction, and in another relaxation of the muscles. Inhibition is a difficult thing to study and a difficult thing to discuss. Years ago Lauder Brunton, I think, pointed out that inhibitory phenomena were due to interference of stimulation waves — attempting to explain the matter simply on physical grounds.

Dr. Taylor: My small knowledge of the subject is purely of a clinical sort, and in my paper, to which Dr. Putnam has alluded, and which was a superficial one so far as any conclusions were concerned, I did not attempt to go into detail on the etiology of this extraordinary condition. It is certainly very true, as Dr. Putnam has said, that the poisoning theory in this particular disease has been worked to the last extreme. Not only has Mitchell here in America made a most careful, but unavailing, search for a toxic cause, but some years ago Goldflam, to whom we owe the earliest complete description of the disease, made a series of investigations also, with practically absolutely negative results. In view of these facts, it seems to me that Dr. Putnam's position is a perfectly correct one, that it is desirable to branch off as far as may be from the toxic theory and to investigate certain other possible causes as explanation of the phenomena observed in periodic paralysis. So far as the inhibition theory goes, I am in perfect ignorance regarding it, excepting what I have learned to-night. If that can be applied to this condition it will be a very valuable step in progress.

Regarding the clinical side of the manifestations, Dr. Putnam has spoken to-night of the dissimilarities in the described cases. It is also of interest to note the very extraordinary similarity of symptoms in the typical cases, which would seem to point almost conclusively to an identical cause. In my case there was a definite involvement of the facial nerves, not previously described. In another case, the sister of the young man whom I particularly described, the patient had had very few attacks, but of a very severe character. In one of these the phrenic nerve was involved, and there was great danger of suffocation from respiratory failure; she was, in fact, obliged to have artificial respiration for several hours before a sufficient power was regained to resume breathing in the ordinary way, and, if I am not mistaken, Goldflam has recently reported one case in which death resulted in an attack. As a rule, however, the condition is not fatal to life. Dr. Putnam spoke of the fact that in the majority of cases, allying it thereby to migraine, the condition passed off toward the middle period of life. I think that is not an absolutely correct statement. So far as I am aware, in nearly all the cases the condition has remained fixed throughout life, comes on near puberty and in most of the reported cases has persisted to death. In the family I have described the paralysis did pass off at the middle period of life. Goldflam has attempted to ally this affection with certain of the pseudohypertrophic conditions of the muscles and has claimed that changes were found in the muscle which to his mind demonstrated the alliance of the two disorders. That seems to be an untenable position, in the first place, because his pathological conclusions are not to be taken without modification, and, in the second place, if it is allied to pseudohypertrophic paralysis, that does not in any way explain the periodicity of the attacks and the peculiar muscular state during the attacks, which are what constitutes the disease as we now know it.

Dr. Prince: I do not feel that I can add anything to the subject. I have had no clinical experience with this disease, and such knowledge as I have has come entirely from reading the literature and particularly from the papers of Dr. Taylor and Dr. Mitchell, and the paper to-night. I have had no opportunity to study it personally. But looking at anything I might say as purely of a speculative nature, there are one or two thoughts that have occurred to me regarding it, and one of them is the analogy to another kind of paralysis, which the reader did not mention

to-night. As he says, we gain a great deal if we bring together different groups of diseases into one class. In all but one particular it seems to me these paralyses resemble very strongly nocturnal paralysis. I would like to ask Dr. Taylor if he knows whether the muscles have ever been examined in nocturnal paralysis?

DR. TAYLOR: That has been suggested as a possible analogy, but, so far as I know, they have no points of identity except the fact that both occur usually at night.

DR. PRINCE: It seems to me, on the contrary, excepting in the electrical reactions, which I do not know anything about, there is a very marked analogy. I think if any one has seen or has had nocturnal paralysis, as I have had as a child, and felt the absolute loss of power of the muscles, he would recognize in the description of periodic paralysis something which is very like nocturnal paralysis. I have seen also many cases of nocturnal paralysis, and as described to me by patients the clinical descriptions as given by them resemble these cases. One patient says she lies hours absolutely helpless from head to foot, unable to move. I don't know what the electrical reactions are, but barring the electrical reactions, speaking purely of analogy, I don't know what stronger analogy we want. The person to whom I am referring lies there hours unable to move hand or foot, as she says; the paralysis passes off after a number of hours only to come again another night — it gives me a picture very like that of the other variety. It all depends whether there is or is not an absent electrical reaction. That does not contradict or uphold the theory suggested by Dr. Putnam. For all we know, nocturnal paralysis may be due to inhibition. In one sense it adds nothing to our knowledge to say that vertigo is epilepsy, but when you bring it from the unknown to the known class it adds considerably to our knowledge. I wish somebody would take the opportunity to examine the electrical reactions of nocturnal paralysis. I remember, as a child, waking up with nocturnal paralysis, not knowing what it was and finding my arms almost helpless, not able to move even the hands; it was a most strange feeling.

Regarding this theory of inhibition, I feel very grateful to Dr. Putnam for having brought this subject up, for I think it is a field in which in the future many discoveries are destined to be made. In a single field hardly any act takes place that does not involve the inhibition of other mental states. Probably scarcely any physiological act takes place that does not mean, the inhibition of other associated mental states. I suppose I am right in saying that the whole principle of counterirritation is inhibition. I think it is Sir William Broadbent who published some time ago a very interesting article on nerve force in which he argued very strongly, and I thought very suggestively, that all nerve force was merely the resultant of two forces, and not simply that the nerve force which resulted in contraction of the muscle was a force sent in a single direction, but two forces, one from the periphery to the centre and another from the centre to the periphery, and whichever was the stronger so the reaction would be. I suppose this conception involves the theory of inhibition very largely, and if his theory is correct I think it probably would have a very strong bearing in this class of cases and the theory of inhibition suggested by Dr. Putnam to-night.

In the line of what Dr. Putnam spoke of in his paper, namely, the inadequacy of the usual explanation of exhaustion from discharge, in corroboration I would suggest a clinical phenomenon commonly observed, and that is the aphasia that sometimes follows an epileptic attack. Epileptic attacks may be followed by complete aphasia. There is a complete suppression of function of certain specialized local areas. That cannot be due to exhaustion, as there can be no discharge in such cases. I had occasion a short time ago to see a very remarkable case of this kind, a case of epilepsy in which there were no real convulsions, but which was followed by complete motor aphasia, although the patient retained the power of writing. The patient and I were able to carry on a conversation by means of a pencil, and yet he was absolutely and completely dumb, — could not say a single word. There was a condition which corresponded to paralysis and was not due to exhaustion of such centres. That, it seems to me, is one fact in corroboration of what Dr. Putnam has said. Such a thing may be due to inhibition, or something like inhibition, whatever inhibition may be.

DR. SMITH: I have never had any experience with this affection, and I do not feel that I can add anything to what has been said. It is one of exceeding interest to me, from Dr. Putnam's paper and Dr. Taylor's, which I read a while ago, and also Dr. Mitchell's, but having had no cases, and having learned all I know of the disease from the literature, I don't feel that I can say anything that would be entertaining to the audience. I am glad that some other method has been suggested of studying these cases, because the toxic theory certainly ought to have been exploded years ago, not only for this, but for many other neuroses.

DR. COURTNEY: I should like to ask Dr. Putnam at what point he makes his inhibition active. I ask the question on account of the electrical and trophic changes which are present in the class of cases under discussion.

Dr. PUTNAM: I can only answer by saying that I do not know. The suggestion of Dr. Meltzer was that it was some influence acting immediately on the spinal cord as a whole. Oddi discusses the cocaine experiments at some length, and thinks the inhibitory action comes on so quickly that it probably is not of chemical nature, more especially as it occurs when the cocaine is applied above the point where the electrical stimulation is applied. He suggests that cocaine anesthesia may likewise be an inhibitory phenomenon.

DR. COURTNEY: Dr. Putnam's inhibition theory appeals to me very much. We know from the experiments of Hoffa and others that the paresis and atrophy observed in the extensor groups going to affected joints is often due to a "strike" — so to speak — and nothing more on the part the cells of the ventral horns of the cord. This being so, it is certainly permissible to assume that the same sort of strike is on during the attacks in cases of family periodic paralysis. I am delighted at Dr. Putnam's handling of the autotoxemic theory in reference to cases in point, for it has long been my feeling that the present habit of attempting to drown the outcry against our ignorance of the real genesis of many nervous phenomena with loud-sounding cant about a mysterious and elusive autotoxin, should be overcome.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of March 13, 1900, the President, Dr. Clement Cleveland, in the chair.

Dr. Cleveland showed a specimen of a ruptured ovarian cyst which he had removed. The patient gave a history of a fall. At the operation a great deal of fluid was found in the abdomen and a tense cyst, at the side of which was another ruptured cyst or possibly part of a multilocular cyst. There was a peritonitis present, so drainage through the cul-de-sac was established. Dr. Skene's clamp was used satisfactorily in the removal of the tumor. Despite all efforts, the patient's bowels could not be made to move and pain and nausea became continuous. Finally forty-eight hours after the operation, the lower bowel was distended by oxygen gas up to the point of pain. After this, the twist or obstruction evidently being relieved, the patient passed gas, the distention disappeared and the abdomen became flat. The patient is now in stupor and the prognosis is bad. The reason for reporting the case is to speak of the method of distending the lower collapsed bowel in the hope of relieving the obstruction higher up, which must be useful in other cases. In reply to questions by Dr. Boldt, Dr. Cleveland said that he had used oxygen in preference to carbonic-acid gas because it was present.

Dr. Brothers called attention to the feasibility of employing the gas in an inverted siphon of seltzer water.

Dr. Cleveland replied that he had used the inverted siphon in a case of intussusception.

Dr. William R. Pryor showed

A CYSTOSCOPE

modified from Dr. Chetwood's. The light is concealed, the handle is changed so as to reduce to a minimum the danger of wetting the wires, and the lumen of the tube is free for the passage of instruments. The chief advantage is in the freedom of mirrors and lenses to be adjusted. It can be used without anesthesia. It is preferable to have the patient under ether and in the Trendelenburg position. The patient is placed in the lithotomy position, the tube is introduced without the lamp and used as a catheter. The table was then lowered into the Trendelenburg position and the lamp introduced. The only necessary caution in its use is to prevent bearing hard against the sides of the bladder.

Dr. Abram Brothers read the paper of the evening on

SOME POINTS IN THE DIAGNOSIS AND MANAGEMENT OF CYSTITIS IN THE FEMALE.

The author referred to the symptomatology of the disease in its acute and chronic forms and emphasized the facts that with the modern means of exact diagnosis of vesical conditions, obscure lesions were no longer a mystery. "Irritable bladder" is now a myth. The author has been working chiefly with the Nitze cystoscope and believes it to have advantages over the Kelly instrument in that the bladder is directly illuminated and a large area can be seen in each field. The position of the patient, too, is easy, and no preliminary dilatation or anesthesia is necessary. Further, the interior of the bladder is distended by a fixed quantity of an antiseptic, transparent medium (boracic-acid solution). The author then related the various visible changes in the bladder in disease, and accepted Casper's classification: (1) Change in color and lustre; (2) increased capillary circulation; (3) swelling; (4) changed secretion. The inspection of the bladder is positively contraindicated in acute inflammations, but is allowed in all forms of subacute and chronic inflammations. Dr. Brothers narrated in detail the treatment of the various forms of vesical inflammation, insisting upon as early an examination of the bladder cavity as is permissible for the establishment of the exact diagnosis. He then showed the Nitze instrument, comparing it as he exhibited it with the instruments devised by Kelly. He claimed simplicity and greater ease of manipulation for the Nitze cystoscope.

Dr. Alexander J. C. Skene, in opening the discussion, said that he agreed with the reader of the paper that instrumental investigation is seldom necessary to make a diagnosis of cystitis. He referred to the necessity of the general practitioner treating cases of cystitis intelligently. In speaking of the differential diagnosis of cystitis, Dr. Skene said that a slight displacement of the bladder could cause frequent urination and pain in the erect position, while a complete prolapsus would not. The degree of cystitis can be determined by the condition of the urine clearly and definitely. But in some forms of ulceration, secondary pericystitis and neoplasms a cystoscopic examination is necessary because the urine does not always show in these cases characteristic changes. The speaker referred to the possibility of doing great injury to the bladder by instrumental examination during an acute cystitis. He spoke of the fact that the Kelly endoscope of to-day was only a modification of the rubber one devised by Dr. Robert Newman many years ago. He said that for examination of the ureters the endoscope was no better than the cystoscope and was more difficult to introduce. Dr. Skene finds that a cystoscope with a slight curve is easy to insert and can be used for ureteral work with as great facility as the Kelly endoscope. In closing, the speaker said that the fountain syringe was to be preferred to the piston syringe, which the reader of the paper had advocated; the possible introduction of air into the bladder was always to be avoided, if possible.

Dr. Hiram N. Vineberg compared the Kelly and the Nitze instruments. He said that the Kelly endoscope has the advantage of sterilization and allows of direct examination. It permits of therapeutic application under the eye and the removal of small foreign bodies, the snipping off of small growths and the curetting or cauterization of the vesical mucosa. By the use of a Kelly instrument the character of the fluid issuing from the ureteral orifice can be easily seen, which is impossible with the Casper or Nitze instrument. By the employment of Kelly's endoscope urine may be collected from either ureter, thus obviating the necessity of ureteral catheterization.

Dr. G. T. Harrison said that the prognosis in chronic cystitis was favorable if pains were taken. The gradual dilatation of the bladder under pressure could be regulated by the use of a funnel.

Dr. Vineberg said that in chronic cystitis the use of scale pepsin dissolved to any percentage desired for each case was beneficial. It is especially soothing to the inflamed mucous membrane.

DR. SKENE said that he feared the traumatism caused within the bladder much more than he did the introduction of bacteria. If the mucous membrane be intact, bacteria will be taken care of. For topical applications the endoscope is to be preferred, but not for the removal of growths. In this procedure the base will continue to bleed; if not it will continue to break down under the influence of the urine and in time a calculus will form. The speaker doubted the necessity of catheterizing the ureters unless there is disease of the pelvis of the kidney or the ureters which needs attention. By the use of Harris's instrument, the urine from each kidney can be obtained separately. The great damage done by such catheterization is by injury, not by the introduction of germs.

DR. JOSEPH BRETTAUER agreed with Dr. Skene on the wisdom of not catheterizing the ureters. He finds it necessary in few cases. He narrated a case of tubercular kidney in which the kidney had likewise been infected by an attempt to catheterize the ureter. Although the instruments were clean and everything was done in an aseptic manner, the patient showed the new infection within twenty-four hours. The speaker endorsed the use of the Harris separator as fulfilling every purpose.

DR. E. B. CRAGIN spoke of Dr. Skene's attitude on the danger of infection of the bladder by dirty catheters and asked if Dr. Skene feared injury to the bladder more than he did the introduction of bacteria.

DR. SKENE replied that he did fear infection of the bladder, but he is equally afraid of traumatism.

DR. BROTHERS closed the discussion by urging that, with care, gradual dilatation of the bladder by the piston syringe was no more harmful than by the fountain syringe, and one knew the exact amount of fluid introduced.

Recent Literature.

A Manual of Modern Gastric Methods, Chemical, Physical and Therapeutical. By A. LOCKHART GILLESPIE, M.D., F.R.C.P.E., F.R.S.E., Lecturer on Materia Medica and Therapeutics in the School of Medicine of the Royal Colleges, Edinburgh, etc. With a chapter upon The Mechanical Methods Used in Young Children, by JOHN THOMSON, M.D., F.R.C.P. (Edin.), Assistant Physician, Royal Hospital for Sick Children, Edinburgh. New York: William Wood & Co. 1899.

This book forms a very excellent and adequate manual upon the subject of which it treats. The outlines upon the clinical methods of examination of the stomach contained in most hand-books of clinical diagnosis or clinical chemistry are inadequate, as they fail to include a clear statement of the *rationale* of the methods.

In this book the descriptions are quite as adequate as those contained in the larger text-books upon the diseases of the stomach and in a much more condensed form.

We are glad to see that the author gives due consideration to the subject of the relations of the quantities of free and combined acids in the gastric contents. This point is of considerable importance in the understanding of the physiological chemistry of the stomach. Yet though it has been for a long time emphasized by Martius and Luttke and Hayem, it is absolutely overlooked in most of the modern text-books upon the stomach. The author's own method for analysis of the contents is certainly an adequate one, but much less simple and, in our opinion, for purposes of clinical work, less adequate than the Töpfer method or some modification of this latter.

The objection to the Töpfer method urged by the author can be easily overcome by slight modifications. Thus, the reading of the dimethyl-amido-azo-benzol test for free HCl can be controlled by the use of 00 tropeolin so as to give accurate results. The alizarin test may be replaced by the Congo-red method. With these modifications this method is, in our opinion, greatly superior to any other for practical work.

Christian Science. An Exposition of Mrs. Eddy's Wonderful Discovery, Including its Legal Aspects. A Plea for Children and Other Helpless Sick. By WILLIAM A. PURRINGTON, Lecturer in the University and Bellevue Hospital Medical College, and in the New York College of Dentistry, upon Law in Relation to Medical Practice, etc. Pp. 194. New York: E. B. Treat & Co. 1900.

Mr. Purrington is a writer of unusual vigor of expression; he uses no unnecessary words, and leaves in the reader's mind not the slightest doubt of his meaning. He is particularly at home in his searching criticism and scathing denunciation of the cult of so-called Christian Science, to which this small volume is devoted. We most cordially recommend the book to our readers who desire a candid legal expression of opinion on this subject, which is becoming of so much social as well as medical importance. The relation of Christian Science to the law, to which the author devotes considerable space, is a matter about which knowledge is apt to be vague. A concise exposition of the subject may be found in these pages. Among the concluding sentences are the following: "But after all, that which will destroy Christian Science is the true exposition in the reviews and daily press of its absurdities, its vulgarities, its false pretences, as well as its dangers. It does not seem possible that a sane or reverent mind, or one with any sense of humor, could accept seriously the preachment of the exceedingly shrewd, but very ignorant and ungrammatical, old lady, once of Lynn, but now of Concord." The book is satisfactorily bound and has an index.

The Year-Book of the Nose, Throat and Ear. The Nose and Throat edited by G. P. HEAD, M.D. The Ear edited by ALBERT H. ANDREWS, M.D. Chicago: Medical Book Co. 1900.

This is a book of 250 pages, arranged in the familiar year-book manner. It is convenient in size, well arranged and unexpectedly interesting to read. The abstracts are well selected and well written. Too much would be worse than too little. This volume contains perhaps too little; of this, however, the authors are aware, and hope to make succeeding issues more complete and valuable.

INTERNATIONAL CONGRESS OF PUBLIC ASSISTANCE AND PRIVATE CHARITY.— This congress, the third, will be held in the "Palais des Congrès" of the Exposition in Paris, from July 30th to August 5th, under the presidency of M. Casimir-Perier.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, MARCH 29, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.

THE PROPER SEATING OF SCHOOL CHILDREN.

THE comparative excellence of the school furniture of Boston schools was formerly a matter of justifiable civic pride, and it will be remembered that as long ago as at the Vienna World's Fair, the exhibit of Massachusetts school desks and chairs elicited favorable European comment and stimulated efforts at improvement. Since then much attention has been given to this question in several countries of Europe, and genuine progress has been made towards its solution. This is also true of some cities in our country. In the meantime, here in Boston, our school authorities have been, comparatively speaking, inactive, or active to but little good purpose. At the present time the school furniture in several cities in this country and abroad is superior to that which is found in Boston.

It is true that in 1892 renewed interest was manifested by the Boston School Committee in the matter of school seating, an interest shown by the Committee's appointment in that year of three physicians from its own members to serve as a special committee on the seating of pupils, and there was at that time an experimental introduction of adjustable desks and chairs into a new primary school at the instance of the special committee. In the same year an able and thorough report by Dr. Charles L. Scudder, entitled "Investigation into one of the Etiological Factors in the Production of Lateral Curvature of the Spine; Reasons why the Seating of School Children should receive very Careful Supervision," was published by the committee as School Document No. 9. Supervisors and the directors of physical training were ordered to aid and advise teachers in the seating of pupils and to report their observations and suggestions to the School Committee. Dr. Hartwell's studies of the seating question were published as School Document No. 8, 1894, and No. 4, 1895. And yet up to this last year of the century, as we have previously said, but little genuine recent progress has been made towards the proper seating of the great majority of the school children of Boston.

There is a general agreement among physicians and hygienists who have investigated the subject, that faulty school furniture is in an eminent degree responsible for the production of spinal deformities, muscular weakness, nervous debility and impaired vision among school children.

The subject was previously presented in 1895, and is to be again presented at the next meeting of the Boston Society for Medical Improvement, with the demonstration of improved chairs. It is to be hoped that this meeting will receive the hearty support of the medical profession, for it is doubtful if symmetrical development in our children is generally compatible with the present method of school seating; and it is impossible to obtain the best intellectual effort in children afflicted with contracted chests and twisted spines, nor can the community hope for the best from the descendants of such.

No question of any individual's profits, or of the claims of a patent with a "push" or a "pull," should be allowed for an instant to stand in the way of the adoption for the public school children of the most serviceable school furniture which a union of science and skill can devise.

THE PATHOLOGICAL INSTITUTE OF THE NEW YORK STATE HOSPITALS.

WE regret to learn that the continued existence of the Pathological Institute of the New York State Hospitals is being threatened. Should this laboratory be closed before a full opportunity has been offered to demonstrate its usefulness, we are convinced that a serious blow will be struck at the spirit of broad-minded research, so much needed, particularly in the line of work which it has been the aim of this Institute to cultivate. The scope of the work as outlined by its director, Dr. Ira Van Gieson, is comprehensive and goes far beyond what we are wont to regard as the field of psychiatry. Herein lies its claim to a generous recognition, and herein also lies an opportunity for criticism, of which its opponents have apparently not been loath to avail themselves. It is natural and quite inevitable that the results of investigation into the nature of mental disease should be slow in appearing. What we now want is good work; we have enough and to spare of the superficial variety, and we can only congratulate the Institute that it has withstood the clamor from various quarters for more publications. The work which has appeared has, on the whole, been valuable, and significant of what we are to expect in the future. Though we do not profess agreement with every detail of the plan of the correlation of sciences toward the definite end of meeting the problems of psychiatry, we see every reason to commend its main features as a most essential step in progress. To overthrow a laboratory which is striving to carry out so admirable a plan, before it has had time hardly to begin the work, except for reasons of the most conclusive character, is a step against which

all who are interested in the progress of scientific medicine should protest. We are quite aware of the fact that a strong tendency now observable in the study of psychiatry is the closer observation of patients, and a constantly increasing scrutiny of their symptoms to the end of better classification. No one doubts the advisability of this method and least of all, we presume, the director of the Pathological Institute in New York, however his opinions may have been distorted by individual interpretations. What Van Gieson claims, as we understand him, is simply a broad conception of the needs and requirements for the proper study of psychiatry, which is only to be gained by approaching the subject from the standpoint of various more or less closely related sciences. Into this scheme he would fit the clinical phenomena in their proper place, by no means ignoring them, and on the other hand, not giving them a prominence which fuller knowledge may show to be erroneous. For our part, we hope the better judgment may prevail in this matter of closing the doors of this really valuable adjunct to medical science, and the Institute be allowed to expand and grow along those lines which widening experience will undoubtedly demonstrate to be at the same time most broadly scientific and most completely practical.

DUST PNEUMONIA.

THERE is not the slightest doubt that dust is a nuisance of the very worst sort, as a residence in Boston during the past winter has amply demonstrated. That it has actually been as deleterious to the health as to the temper of the community has not been so completely shown, yet there is considerable evidence to prove that disease germs may be carried in dust to the extent of exciting certain specific diseases, among them pneumonia. In connection with a general discussion of pneumonia which has appeared in the current number of the *Practitioner*, a paper by Dr. Alfred Hillier is devoted to a consideration of the effect of dust in the etiology of the affection. Alluding to the prevalence of an inflammation of the lungs following the violent dust-storms of the subtropical countries, he thinks there is nothing inherently improbable in the supposition that a true pneumococcus pneumonia may be aroused, the dust acting as a contributory cause. Of his own experience he writes: "A Johannesburg or Kimberley dust-storm may sometimes continue for days, and during the storms a considerable number of cases of pneumonia not infrequently occur. I have myself been conscious of a considerable degree of thoracic pain, during a dust-storm, such as irritating particles of inhaled dust might conceivably produce, and a medical colleague and intimate friend of my own developed pneumonia, following just such a sensation as I have described, during a series of dust-storms in Johannesburg. He has held the view most strongly ever since that dust was the cause of his attack. . . . Chronic fibroid effects on the lung produced by dust have long been recognized, and they are frequently forerunners of phthisis, which subsequently becomes established. Is it not also possible that dust may be capable, under certain conditions, of exciting an acute inflammatory condition of the lung, in which pneumonia rapidly follows, or, it may be, simultaneously occurs? The statistics quoted by Dr. Newsholme from the Registrar-General's returns, and the belief which the experiences of medical men in South Africa have given rise to, would seem to indicate that this is probable. There is, of course, also the possibility that besides the mechanical irritation of dust particles, pneumococci may also, like tubercle bacilli, be inhaled with dust."

In general, it may be said that more investigation on the whole subject is desirable, and likely to be productive of positive results, with the means of accurate observation and experiment now at our disposal. It is not unreasonable to hold that even when specific germs are not present in dust itself, the action of dust upon the mucous membranes makes them hospitable culture fields for such germs, from whatever quarter they may come.

MOSQUITOES AND MALARIA.

THE campaign, so auspiciously begun, to determine the relation of a certain genus of mosquito to malarial infection is not likely to rest until it is carried to complete success. To this end several ingenious practical experiments have been devised, under the direction of Dr. Patrick Manson, in connection with the London School of Tropical Medicine. Dr. Manson is having built on the marshes of the Roman Campagna a bungalow, in which two observers and their servants are expected to live from May to October. The hut will be protected in every possible way from the inroads of the mosquitoes by nettings, in order that bites may be obviated. If the dwellers in the hut escape malarial infection, the assumption will be justified that the mosquitoes are the carriers of the infection, and valuable negative testimony will be gained. It is further suggested, as positive evidence, to breed malaria-free mosquitoes in London, which will then be taken to Rome and fed on the blood of persons infected with the disease. On their return to London these mosquitoes will be allowed to bite healthy individuals, and the result carefully noted. Should the disease be produced in this way, knowledge of positive importance will be gained. We suspect, however, that the problem is not so simple as the foregoing experiments would imply, and that other factors than the omnipresent mosquito will be found to have a share in the production of the disorder. We cannot help wondering, also, whether this method of experimentation will please the antivivisectionists. Man will, at least, be the only sufferer, unless it proves necessary to attempt the extermination of the race of mosquitoes, as a result of the positive evidence gained from the experiments.

The most lethal and most commercially available methods so far discovered for sacrificing these lower orders of life we give elsewhere.

DESTRUCTION OF THE MOSQUITO FOR THE LIMITATION OF MALARIA.

CELLI and Casagrandi[1] have made many experiments with reference to the action of different substances in destroying and preventing the development of the mosquito, either in the larval state in the water, or in its perfect form as a flying insect. Their paper contains many tables of different substances, showing the length of time required for killing the insects, the quantity, the cost and other particulars. Their general conclusions are as follows:

(1) The condition in which the mosquito is most readily destroyed is either that of the larva or of the winged insect (not the egg). In the first case they are destroyed the more easily the younger they are.

(2) For destroying the larva the following substances have proved efficient in the order named:

(*a*) Among mineral substances, anhydrous sulphuric acid, potassic permanganate, common salt, potash, ammonia, carbonate of lime, bichloride of mercury, chloride of lime, sulphate of iron or copper, lime, and others of less efficiency.

(*b*) Among organic substances, powder of chrysanthemum flowers (pyrethrum), tobacco, petroleum, formalin, cresol, aniline colors and tar.

Considering, however, the doses necessary to destroy the insects, and the questions of practicability and price, all mineral and some organic substances must be disregarded, and vegetable powders, petroleum and aniline colors only can be considered.

(3) To destroy the winged insect, odors, fumes or gas may be employed. Among odors are turpentine, iodoform, menthol, oil of nutmeg, camphor and garlic. Among the fumes are those of tobacco, pyrethrum, fresh leaves of eucalyptus, quassia. Among gases, anhydrous sulphuric acid. It is to be noted, however, that these gases, odors, etc., in order to be efficient, must fill or saturate all the surrounding air, otherwise they only cause apparent death, or at best the flight of the insects, by which means they are sometimes useful in protecting man from mosquito bites, and preventing the insects from settling in habitations and sucking the blood from malarial patients.

(4) The problem of destroying mosquitoes can be solved experimentally, but practically only when economic considerations demand it. In the latter sense it is worthy of note that the antiquated use of petroleum for killing the mosquito has never become general even in districts where it is very cheap, and it is probable that such substances will be preferred as will also destroy other forms of aquatic life which are injurious to agriculture, and such as may be cultivated on the spot. For example, if the cultivation on a large scale of the chrysanthemum cinerariæ is carried on, it may happen that the very spot infected with malaria will produce the material needed for the destruction of the mosquitoes which infest it.

(5) The best time to destroy the larvæ is the winter season, when they are few in number and new generations are not being produced. Destruction of the mosquito in houses is always possible, but work on a large scale may be best conducted in winter. A better knowledge of their habits, places and times of breeding will facilitate their destruction, which will, even in the most favorable cases (that is, when the drainage of the soil shall have been effected), be an undertaking not as easily accomplished as some have imagined. Nevertheless, we may hope, in view of the vast sums spent by nations in preserving the grapevine from noxious insects, that something may yet be done for saving the life of man from the malarial mosquito.

To this paper the authors have added an appendix containing the results of later experiments, with a new aniline color known as *larycith III*, a substance of unusual culicide action and comparatively low cost, when used for the destruction of larvæ.

[1] Annali d'Igiene Sperimentale, ix, 3, p. 317, 1899.

MEDICAL NOTES.

AMERICAN MEDICAL ASSOCIATION, SECTION ON DISEASES OF CHILDREN.— At the next annual meeting of the American Medical Association to be held at Atlantic City, N. J., June 5–8, 1900, a session of the Section on Diseases of Children will be devoted to the consideration of school children. The following papers will be presented: E. Stuver, Fort Collins, Col., "Symmetrical Development, or Does our Present School System Develop the Highest Powers of the Child?" J. Henry Bartlett, Superintendent of the Friends' Select School, Philadelphia, "School Break Downs"; Thomas H. Fenton, Philadelphia, "Eye Strain"; Louis J. Lautenbach, Philadelphia, "The Care of the Ear in School Children"; Dr. Grace E. Spiegle, Philadelphia, "The Physician's Responsibility in the Physical Education of School Children." Summary: "Medical Inspection of School Children, its Purpose, its Results; Health Supervision of School Children; Attitude of Family Physician toward the School Authorities, Teachers, Parents and Child." Another session will be devoted to the consideration of contagious diseases.

PLAGUE.— Three deaths have occurred in the Chinese quarter of San Francisco of a disease which the Board of Health regards as plague. Precautions have been taken to prevent a spread of the disease in this unsanitary portion of the city. There is no great alarm among the white residents, since there is little communication between Chinatown and the remainder of the city. A correspondent of the Associated Press, writing from Honolulu, March 15th, states that but one case of plague had appeared during the preceding eleven days and that the rigid quarantine regulations

were being modified. Two hundred and fifty thousand dollars more has been asked for, to meet the many expenses incurred during the prevalence of plague. The natives are said to be in great destitution.

A Needle in the Appendix.—According to the *Medical News*, a sewing-needle, two and one-half inches long, was recently found in the vermiform appendix of a patient operated upon at Hartford, Conn., for appendicitis. The young woman remembers having swallowed a needle several years ago.

Dr. Byrom Bramwell a Candidate for the Edinburgh Professorship of Medicine.— Dr. Byrom Bramwell, of Edinburgh, is a candidate for the chair of professor of medicine in the University of Edinburgh, made vacant by the death of Prof. Grainger Stewart.

A New Laboratory for Cornell University.— A new laboratory for physiology and anatomy is projected at Cornell University. Eighty thousand dollars has recently been given for this purpose.

Resignation of Dr. John Ashhurst, Jr.— The resignation of Dr. John Ashhurst, Jr., from the chair of surgery in the University of Pennsylvania is announced.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, March 28, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 73, scarlatina 30, measles 75, typhoid fever 1, smallpox 1.

Death-Rate in Boston. — The death-rate in Boston for the week ending March 24th again shows increase, being 34.4 as against 20.3 for the corresponding week in 1899. The total number of deaths for the week reported to the Board of Health is 366, an increase of 154 over the corresponding week last year. There was an increase of 19 deaths from influenza over the previous week, making 40 for last week and a total of 71 for three weeks. Of the 40 deaths from influenza last week only 5 were non-complicated; 22 were in connection with pneumonia, 5 with bronchitis, 2 with heart disease, 2 with old age, 2 with cerebral diseases, and 1 with marasmus. The number of deaths from pneumonia last week was 100, as against 21 for the corresponding week last year. It is well to bear in mind that a large part of the mortality attendant upon such an epidemic of influenza is among the aged and the infirm with a feeble hold upon life. In so far as this is the case, the present increased death-rate is likely to be followed by a diminished death-rate later in the year, the poorer lives having been eliminated a little earlier than they otherwise would have been.

Boston Society of Medical Sciences. — A meeting of the Society was held March 20th, at which the following papers were presented: Dr. J. H. Pratt spoke on the "Histology of Acute Pneumonia," being the result of the study of a large number of autopsies at the Boston City Hospital; Dr. Thomas Dwight demonstrated a specimen showing "Absence of the Vena Cava Inferior below the Diaphragm," and spoke on the development of that portion of the circulatory system concerned in the anomaly; Dr. C. S. Minot spoke on "The Solid Stage of the Intestine in the Chick"; Dr. F. B. Mallory read a paper for Dr. W. T. Councilman on "The Lobule of the Lung and the Relation of the Lymphatics to It," illustrated with lantern slides of photomicrographs.

A Gift of $75,000 for the Massachusetts General Hospital.— It is reported that the Massachusetts General Hospital has received a gift of $75,000, conditional upon the same amount being raised in addition, to be used for a new out-patient building. The gift has been formally accepted. Should this whole sum of money become available it will provide, as far as this one hospital is concerned, "for establishing on a proper basis the dignity of its out-patient departments and according them the measure of esteem which their work for the community and for scientific progress demands." We repeat the closing sentence of our last week's editorial on this subject.

Needs of the Newton Hospital. — Owing to the number of cases of contagious disease during the past winter, the trustees of the Newton Hospital are urging an increase in the size of the contagious wards or the building of new ones. It is estimated that an appropriation of $40,000 to $50,000 is desired to meet the requirements, an amount which it is improbable will be granted this year.

Antivivisectionists Have Leave to Withdraw. — The committee of the Massachusetts Legislature to whom was referred the Bill for the Further Prevention of Cruelty to Animals reported unanimously, March 26th, leave to withdraw.

NEW YORK.

Bill Regarding Effects Found on the Dead. — A bill which has been recently passed by the Assembly makes it a misdemeanor to publish any letter, telegram, or private paper secured from the clothing or homes of the dead or seriously injured, the only exceptions being when the coroner deems that publication will serve the ends of justice. This, it has been pointed out, would still leave much to official discretion, but it would also impose a considerable amount of responsibility for the exercise of that discretion in a defensible manner, and the consequences of the statute's enforcement could hardly fail to be commendable. As the law now stands, almost every case of mysterious death, and many cases of death merely sudden or accidental, are made the excuse for giving wide publicity to any letters or other private documents found among the deceased's effects, whether or not such material has any relevancy to the mishap or crime under investigation.

Small-pox at Columbia University. — Columbia now has its small-pox scare. On March 22d a student in the Law School of the University was dis-

covered to be suffering from the disease, and was removed from his boarding-house to the hospital for contagious diseases on North Brother Island. Nearly four hundred professors, students and employés were vaccinated, and all the students who boarded in the same house or had called to see the patient were excluded from the University and its grounds, until they could produce certificates from the Board of Health, to the effect that all danger of contagion was passed.

A FUND FOR THE "MAINE" AND THE RED CROSS SOCIETIES. — As the result of a concert given at the Metropolitan Opera House on March 22d, by members of the Maurice Grau Company, the sum of $12,000 was realized for the American hospital ship *Maine* and the British and American Red Cross Societies. Among those present were the Governor-General of Canada and Lady Minto.

FREE PUBLIC BATHS AND GYMNASIUMS. — The Sanders Bill to establish free public baths and gymnasiums in cities, villages and towns of the State has been passed by the Assembly; also Dr. Henry's bill amending the military code, and establishing a new hospital corps in the State Militia.

QUARANTINE AGAINST RABIES. — The Governor has signed the bill providing that the State Commissioner of Agriculture may quarantine a district in which rabies is prevalent, and exempting from liability any person who kills an animal affected with the disease.

Miscellany.

EXPENSE OF MEDICAL CONSULTANTS IN SOUTH AFRICA.

COMMENTING on certain medical phases of the South African War, the *Practitioner* says: "A daily paper professes to think that the fact of Sir William MacCormac receiving pay detracts from the credit due to him for his patriotism. This is sheer cant. Sir William gains nothing in money from his appointment, and makes an enormous sacrifice of time and comfort, and too probably of health. The appointment was not of his seeking; he was, as I happen to know on the best authority, asked to go, and from a sense of duty he went. It is no light matter for a man of his age to expose himself to the manifold risks of such a war as is now being waged in South Africa. As a mere matter of business, however, I am inclined to doubt whether all this expenditure on consulting surgeons is justifiable. These gentlemen are being paid collectively at the rate of £35,000 a year. The question is certain to be asked in Parliament at some time or another, Does the country get its money's worth? The men, of course, are worth it, and more than worth it. But is the work which, in the peculiar circumstances of the case, they are able to do worth it? The Royal Army Medical Corps have shown themselves, in spite of the Cassandra-like vaticinations of Professor Ogston, fully capable of dealing with all the emergencies of the battlefield and the base hospital. There must, therefore, be comparatively few cases in which there is any particular need for the intervention of the consulting surgeon. Consequently these gentlemen must either take work which could be done more cheaply by the medical officers, or they must waste their scientific sweetness on the desert air. Of course the moral effect of their presence must be taken into account, but this hardly enters into the calculations of the economist."

It must, however, be remembered that the different point of view which such civilian surgeons bring to bear upon the problems of administration in the medical service of the army may be a matter of considerable consequence and value. At the recent 127th anniversary dinner of the Medical Society of London, Surgeon-General Jameson spoke very highly of the new departure of attaching civil consulting surgeons of eminence to the Army Medical Corps at the front. They were, he considered, not only of the greatest use in consultation over perplexing cases, but were also sources of strength in defence from adverse criticism. On the other hand, Surgeon-General Jameson stated that he and those on the spot were fully convinced that female nurses were out of place at the front; that a field hospital, to be of any use, must be perfectly mobile, and this was impossible with female nurses.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MARCH 17, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Typhoid fever.	Diphtheria and croup.	Measles.
New York	3,854,594	1622	532	20.16	26.34	.54	3.54	1.08
Chicago	1,819,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	580	181	23.29	15.30	2.89	4.08	4.42
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	341	96	19.72	33.35	1.16	3.48	1.16
Baltimore	506,389	234	76	16.34	24.08	.43	1.29	.43
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	308,000	—	—	—	—	—	—	—
Washington	277,000	130	31	18.48	17.71	1.54	2.31	.77
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	86	30	26.68	24.36	—	1.16	5.80
Nashville	87,754	43	9	13.98	25.63	—	—	—
Charleston	65,165	29	8	13.80	17.25	3.45	—	—
Worcester	111,732	43	12	16.24	20.88	—	6.96	—
Fall River	103,142	59	26	11.53	30.42	3.38	—	—
Cambridge	92,520	28	9	3.57	32.13	—	—	—
Lowell	90,114	33	13	24.24	18.18	—	6.06	—
New Bedford	70,511	26	8	23.10	26.95	—	—	—
Lynn	68,218	28	8	10.71	17.85	—	3.57	—
Somerville	64,394	28	6	10.71	28.56	—	—	—
Lawrence	59,072	23	9	13.05	17.40	—	8.70	—
Springfield	58,266	18	3	33.33	5.55	—	—	—
Holyoke	44,510	9	5	—	22.22	—	—	—
Brockton	38,759	18	4	5.55	5.55	—	—	—
Salem	37,723	16	4	6.25	12.50	—	6.25	—
Malden	36,421	14	5	21.42	—	—	7.14	—
Chelsea	34,235	20	7	10.00	—	—	—	—
Haverhill	32,651	13	2	7.69	30.76	—	—	—
Gloucester	31,426	—	—	—	—	—	—	—
Fitchburg	30,523	8	3	—	37.50	—	—	—
Newton	30,461	13	3	30.76	7.69	—	—	7.69
Taunton	28,527	18	2	22.22	5.55	—	—	—
Everett	28,102	13	2	7.69	30.76	—	—	—
Quincy	24,578	11	3	18.18	27.27	—	—	—
Pittsfield	23,401	—	—	—	—	—	—	—
Waltham	22,791	6	2	16.66	—	—	—	—
North Adams	21,583	10	5	—	10.00	—	—	—
Chicopee	18,316	10	8	—	20.00	—	—	—
Medford	17,190	6	2	—	16.66	—	—	—
Newburyport	15,636	10	1	—	20.00	—	—	—
Melrose	14,721	3	—	—	—	—	—	—

Deaths reported 3,475; under five years of age 859; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 701, acute lung diseases 859, consumption 380, diphtheria and croup 113, measles 55, typhoid

fever 36, whooping-cough 34, scarlet fever 28, diarrheal diseases 24, erysipelas 19, cerebrospinal meningitis 12.

From whooping-cough New York 19, Providence 5, Boston and Washington 3 each, Philadelphia, Baltimore, Taunton and Clinton 1 each. From scarlet fever New York 15, Boston 7, Philadelphia 3, Baltimore, Washington and New Bedford 1 each. From diarrheal diseases New York 11, Boston, Providence, Fall River and Lowell 2 each, Baltimore, Washington, New Bedford, Lawrence and Springfield 1 each. From erysipelas New York 14, Philadelphia 2, Boston, Baltimore and Malden 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,236, for the week ending March 10th, the death-rate was 20.4. Deaths reported 4,553: acute diseases of the respiratory organs (London) 378, whooping-cough 131, measles 120, diphtheria 85, scarlet fever 33, fever 32, diarrhea 23.

The death-rates ranged from 13.0 in Huddersfield to 32.4 in Salford: Birmingham 22.9, Bradford 17.3, Cardiff 16.6, Gateshead 18.6, Hull 22.3, Leeds 20.9, Liverpool 19.5, London 18.8, Manchester 26.9, Newcastle-on-Tyne 18.2, Nottingham 18.7, Portsmouth 19.0, Sheffield 23.2, Swansea 14.3, West Ham 14.9.

METEOROLOGICAL RECORD

For the week ending March 17th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		Weather. *		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S...11	29.88	22	32	11	46	30	38	N.W.	N.W.	22	22	C.	C.	
M..12	30.07	17	27	7	43	26	34	N.W.	N.W.	18	16	C.	C.	
T...13	30.06	21	31	11	61	67	64	N.	E.	8	9	C.	F.	
W..14	29.88	36	47	26	64	52	60	W.	W.	6	14	F.	C.	
T...15	30.06	26	32	19	57	93	75	N.W.	N.E.	12	14	F.	N.	.06
F...16	29.47	41	58	24	96	55	76	S.	W.	34	21	R.	C.	2.15
S...17	30.06	24	36	12	58	44	51	S.W.	N.W.	13	23	C.	C.	

☞

* C., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☞ Mean for week.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MARCH 24, 1900.

J. D. GATEWOOD, surgeon, detached from the "Lancaster" and ordered to the Bureau of Medicine and Surgery, Navy Department.

F. WOOD, pharmacist, retired from active service, March 20, 1900.

E. THOMPSON, assistant surgeon, detached from the "Celtic" and ordered to the "Nashville."

M. K. JOHNSON, assistant surgeon, detached from the "Nashville" and ordered to the "Celtic."

H. H. HAAS, assistant surgeon, detached from the "Baltimore" and ordered to the "Don Juan de Austria."

W. B. GROVE, assistant surgeon, detached from the "Brooklyn" and ordered to the "Scandia."

F. L. BENTON, assistant surgeon, detached from the Naval Hospital, Yokohama, Japan, and ordered to the Naval Hospital, Cavite, P. I.

J. S. TAYLOR, assistant surgeon, ordered to the "New Orleans."

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING MARCH 22, 1900

PURVIANCE, GEORGE, surgeon. Granted leave of absence for fifteen days from March 24th. March 22, 1900.

GLENNAN, A. H., surgeon. To proceed to Port Townsend, Washington, as inspector of quarantines. March 17, 1900.

WHITE, M. J., assistant surgeon. To proceed to Reedy Island Quarantine Station for special temporary duty. March 16, 1900.

STEPHENSON, CHAS W., hospital steward. To proceed to Chicago, Ill., and report to the medical officer in command, for duty and assignment to quarters. March 21, 1900.

APPOINTMENTS.

W. THEO. WAS, appointed acting assistant surgeon, for duty at Fernandina, Fla. March 17, 1900.

CHAS. W. STEPHENSON, of Ohio, appointed hospital steward. March 20, 1900.

SOCIETY NOTICES.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. — A regular meeting of the Society will be held at the Medical Library, 19 Boylston Place, on Monday evening, April 2d, at 8 o'clock.

The Society will consider "The Proper Seating of School Children."

Dr. Jas. S. Stone will read a paper upon the "Injurious Effects of Improperly Constructed Chairs."

Prof. Edw. F. Miller, of the Massachusetts Institute of Technology, will demonstrate a "Chair Devised to Meet the Anatomical Requirements."

Dr. Edw. M. Hartwell will describe "Previous Attempts to Solve the Problem."

ARTHUR K. STONE, M.D., *Secretary*, 657 Boylston Street.

SUFFOLK DISTRICT MEDICAL SOCIETY, SURGICAL SECTION. — The Surgical Section will meet at the Medical Library, 19 Boylston Place, on Wednesday evening, April 4, 1900, at 8.15 o'clock.

"Actinomycosis, with Report of Cases," by Dr. C. A. Porter.
"Report of Cases of Actinomycosis," by Dr. J. C. Munro.
"A Case of Tendon and Nerve Suture," by Dr. F. B. Lund.

F. G. BALCH, M.D., *Secretary*, 279 Clarendon Street.

RECENT DEATHS.

JOHN B. HOFFMANN, M.D., of Union Hill, N. J., died of pneumonia, on March 18th, at the age of thirty-five years.

RICHARD HARRIS, M.D., of White Plains, Westchester County, N. Y., died on March 19th, in his seventy-third year.

BOOKS AND PAMPHLETS RECEIVED.

Albuminuria and Its Relation to Diseases of the Eye. By Alex. W. Stirling, M.D., C.M. (Edin.), D.P.H. (Lond.), Atlanta, Ga. Reprint. 1899.

Reports of the Trustees and Superintendent of the Butler Hospital for the Insane, Fifty-sixth Annual Meeting, January 24, 1900. Providence, R. I.

Strangulated Hernia: Some Practical Remarks Concerning Its Diagnosis and Its Proper Management. By Parker Syms, M.D., New York City. Reprint. 1900.

Boston Normal School of Gymnastics, Eighth Annual Catalogue of the Instructors, Students and Graduates, with a Statement of the Course of Instruction, 1898-99.

Some Considerations in Sugar-Testing, with Description of a Method for the Detection and Estimation of Sugar in the Urine. By Arthur R. Elliott, M.D. Reprint. 1900.

Neue Mitteilungen zur galvanokaustischen Radikalbehandlung der Prostatahypertrophie per vias naturales (Bottini'sche Operation). Von Dr. Albert Freudenberg, Berlin.

Transactions of the Mississippi Valley Medical Association, Twenty-fifth Annual Session, Chicago, Ill., October 3, 4, 5 and 6, 1899. Vol. I. Printed for the Association. 1899.

Contribuzioni allo Studio dello Sviluppo dei Nervi Encefalici nei Mammiferi. In Confronto con altri Vertebrati. Del Dott. Giulio Chiarugi. Tip di G. Carnesecchi e Figli. 1894.

Sul Decorso delle Vie Afferenti del Midollo Spinale, Studiate col Metodo delle Degenerazioni, dai Dottori Ruggero Oddi, Umberto Rossi. Firenze: Coi Tipi dei Successori le Monnier. 1891.

Contributo allo Studio della Struttura, della Maturazione e della Distruzione, della Uova degli Anfibi (Salamandrina perspicillata e Geotriton Fuscus). Del Dott. Umberto Rossi. Tip di G. Carnesecchi e Figli. 1895.

The Year-Book of the Nose, Throat and Ear. The Nose and Throat edited by G. P. Head, M.D. The Ear edited by Albert H. Andrews, M.D. Chicago, Ill.: Chicago Medical Book Co. 1900.

Hand-Book of Physiology. By W. D. Haliburton, M.D., F.R.S., Professor of Physiology, King's College, London. Fifteenth edition, illustrated. Philadelphia: P. Blakiston's Son & Co. 1899.

Venereal Diseases, their Complications and Sequelæ. By Edward L. Keyes, A.M., M.D., and Charles H. Chetwood, M.D. Illustrated by eight full-page plates in black and colors and 107 engravings. New York: William Wood & Co. 1900.

How Far Has Specialism Benefited the Ordinary Practice of Medicine? Imperfect or Deficient Urinary Excretion as Observed in Connection with Certain Diseases of the Skin: A Study based on Two Thousand Urinary Analyses. By L. Duncan Bulkley, A.M., M.D., New York. Reprints. 1899.

Original Articles.

ON DISTORTION OF THE SPINE; WITH THE REPORT OF TWO CASES OF DIPLEGIA BRACHIALIS DUE TO THIS CAUSE.[1]

BY J. W. COURTNEY, M.D., BOSTON,
Assistant in Nervous Department, Boston City Hospital; Visiting Physician to the Home for Incurables, Dorchester.

Distortion or, as it is sometimes called, diastasis of the spine, may properly be defined as the result of the operation of a traumatizing force which, had it continued to act, would have produced a true luxation. The result to the spine itself is a transitory yielding of one or more articulations consequent upon a more or less complete tearing of their capsular and other ligamentous investments. A very good example of this ligamentous rupture is to be found in the accompanying illustration, which I have sketched from the recent work of Wagner and Stolper on injuries of the spine and cord.

From the topographical relation of the vertebræ both to the spinal cord and to its roots, it is obvious that from the variety of spinal injury under consideration there may result simultaneously lesions of the cord or nerve roots, or both.

In distortion thus interpreted we have the only rational explanation of those nervous lesions which, during the dark ages of neuropathology and surgical neurology,— if the latter term be permissible,— were classed as concussion of the spine. During the reign of this now obsolete concussion theory, the nerve lesions were explained on the ground of the violent jerking backwards and forwards of the cord against its containing canal. To make such a theory tenable, it would be necessary, as Thornburn has pointed out, that the resultant nerve lesions be diffuse, since the cord would naturally move *en masse;* whereas, in point of fact, such lesions are nearly always, though not invariably,— as in Thornburn's experience,— limited to the region of origin of the last four cervical and first dorsal roots, a region corresponding to the bodies of the fourth, fifth and sixth cervical vertebræ and the one which forms the summit of the arch of the cervical curve. It is therefore obvious that it is much more rational to consider the nervous lesions as the result of a pathological exaggeration of the movements which the above-indicated portion of the spine normally possesses, and such pathological exaggerations may be enumerated as hyperflexions, either anterior or lateral, hyperextension and hyperrotation.

As already stated, a distortion is to be looked upon as a pause in the act of luxation, so that the distinguishing feature between them is that in the former a hooking or cogging of the vertebræ or their processes sufficient to cause a fixation of the distorted portions never takes place. Distortions may occur in the lower portions of the spine, though less frequently in the dorsal region, and still less in the lumbar. Nevertheless, as Wagner and Stolper say, it is on the basis of distortion that we are often forced to explain the pains complained of by persons who have suffered falls or abnormal bendings involving the latter region.

The phenomena which accompany the bony and ligamentous lesions of cervical distortion are, naturally, in part, similar to those observed in luxation. The patient complains of sharp pains in the neck; and the head, which previously was freely movable, is held stiffly in a fixed position. If the lesion is bilateral, rotation or other abnormal fixation is absent, but if unilateral, the head is so held that the ear of the affected side is drawn toward the shoulder, while the face is turned toward the opposite side. The most prominent symptoms are the stiffness and the sharp pains when the head is moved passively. On the whole, the pain is greater than in true luxation, since in luxation the ligaments are completely torn and, consequently, no longer stretched by movements, while in distortion only a portion of the ligaments are torn and the rest put on the stretch. Distortion is, therefore, more painful, although the injury is less. Pain may also be elicited by pressure and is usually found to be of maximum intensity in the neighborhood of the distorted joint. It may also be elicited, however, by pressure on the lateral processes and spines of the vertebræ in the immediate neighborhood of the injured joint, or even by pressure upon the head, since all such manipulations tend to alter the vertebral contour. As pain is the most prominent symptom in all forms of spinal injury, it is necessary to bear in mind that the pain accompanying distortion is not only more severe than that which one discovers in other lesions, but that it has a further characteristic. This Kocher illustrates as follows: If one is dealing, for example, with a left anterolateral luxation of the atlas, the head cannot be further drawn to the left but can be drawn somewhat toward the right, and the pain evoked is less when one attempts the left movement, since motility is less in this direction. In distortion, on the other hand, exactly the converse is true and it will be found that whereas movement occurs more readily toward the affected side, it excites much more intense pain than movements in the opposite direction. This contrast is, naturally, not always so sharp, since in a case of bilateral distortion rotation toward either side is limited and painful.

The nervous lesions accompanying distortions have many characteristic features, and every surgeon should be familiar with them, since they often in themselves give a direct clew as to the nature of the spinal lesion, and always determine the prognosis in a given case. Oftentimes injury of the spinal nerves alone occurs, and the damage may be further restricted to either their sensory or their motor roots. If sensory roots alone are damaged we get such irritative phenomena as tingling, formication and radiating pains, the latter in the form of burnings or severe neuralgic attacks, and the diagnosis is more certain when, in lesions at the level of the cervical enlargement, pains occur only in the region of the arms, without any manifestations in the trunk and legs. Especially characteristic of sensory root lesions is the occurrence of those phenomena of disturbed sensibility known as analgesia hyperesthetica and anesthesia dolorosa.

Injury of motor roots shows itself, in distinction to that of sensory, less by irritative phenomena than by a disturbed motility — either paresis or paralysis — which is immediately or gradually regressive. This

[1] In the preparation of this paper free use has been made of the excellent works of Kocher: Die Verletzungen der Wirbelsäule zugleich als Beitrag zur Physiologie des menschlichen Rückenmarks, in Mittheilungen aus den Grenzgebieten der Medicin und Chirurgie; and of Wagner and Stolper: Die Verletzungen der Wirbelsäule und des Rückenmarks, in Deutsche Chirurgie, Stuttgart, 1896.

tendency to regression is also characteristic of the sensory disturbance. In spite of it, however, previously paralyzed muscles may soon atrophy.

Kocher inclines to the belief that the nerve injuries in these cases are often the result of pressure from the effused blood of extramedullary hemorrhage, but this view, as well as the other of this author which makes the pressure of extramedullary bleeding responsible for many of the transitory cord symptoms also observed in these cases, seems to the writer more than debatable. Many reasons for such scepticism might be alleged, prominent among which would appear the fact of the noteworthy absence of extramedullary bleeding in the majority of cases of severe crush of the cord from fracture or luxation.

The distinguishing feature of most cord lesions accompanying distortion is their incompleteness. Their

Distortion of spinal column: (a) Rupture of ligament between the second and third cervical vertebræ.

symptomatology is accordingly characteristic. Pathologically, they are to be looked upon as hemorrhagic in origin, and, as a rule, they have their seat in the central gray matter. Hence arises a symptomatology which indicates a softening with more or less permanent damage to the tissues immediately involved in the hemorrhagic focus, with transitory pressure and irritation of tracts which are contiguous. It is to this pressure and irritation of the crossed pyramidal tracts, for example, that we may ascribe the paralysis or paresis of the whole or a large motor territory below the point of lesion, with loss of sphincteric control.

The incompleteness of lesion is often evidenced by the onesidedness of the symptoms, such as where arm and leg of the same side have suffered more than those of the other, or where, as accompanying lesion of both the arms, one leg showed marked paralysis. Finally characteristic, in contradistinction to total transverse lesions, are the motor irritative phenomena — which usually occur late — such as twitchings and contractures. The vasomator symptoms usually fully parallel the motor lesion both in seat and extent, though not invariably, since with paresis of the fibres going to the muscles, irritation of the vasoconstrictors may occur, with vascular contraction and consequent coldness of the paralytic limbs. The sensory disturbances in partial cord lesions from trauma are even more characteristic in their incompleteness than the motor; consequently sensory irritative phenomena are common. It is not unusual to have sensibility retained in the presence of transitory or permanent complete paralysis of one of the lower portions of the body, or altered merely quantitatively and qualitatively. In case, therefore, sensory paralysis is absent or incomplete in the sense that its distribution does not cover an area which is represented in the cord as high as that which presides over the paralyzed muscles, the surgeon may be sure that he is dealing with a partial cord lesion only.

Of equal significance is, with distribution over the territory of several nerves or nerve roots, the varying implication of the different forms of sensibility, with the result that, for example, simple anesthesia with or without synchronous disturbance of the thermal sense is present over a large area, with retained tactile and pressure sense. The occurrence of merely analgesic areas alongside of completely anesthetic ones in such fashion that one finds analgesia beginning rather high up on the body and extending to the point of lesion, while the anesthesia reaches only to a far lower level, or vice versa, is also diagnostic of incompleteness.

The chronological order of appearance of sensory, motor and irritative phenomena is a further diagnostic point of importance in determining the presence of partial cord lesions. In such lesions the march of symptoms is usually such that with the disappearance of the disturbance and the restoration of conduction, transitory hyperesthesia follows on anesthesia, radiating algesic phenomena on analgesia, twitchings on complete paralysis. This order, it should be remembered, is exactly antipodal to what follows in slowly developing cord lesions, since in the latter the irritative phenomena, as a rule, precede the paralytic.

The behavior of the deep reflexes, more particularly the patellar, is of great importance in determining the extent of the lesion transversely. As it is now a generally accepted fact that a persistently absent knee-jerk (after trauma) denotes a complete transverse lesion of the cord, the surgeon may safely assume in the case where this reflex is preserved that the lesion is only partial and capable to a certain extent of repair. In the great majority of partial cord lesions, where a combination of marked motor disturbance with decidedly less sensory is the rule, the deep reflexes are increased; and even in those cases where, on account of a temporarily more pronounced cessation of conductivity, they are abolished, this abolition is only transitory and gives place to excessive activity. This excessive activity often outlasts the paralysis in point of time.

Urinary retention is practically never absent in complete traumatic transverse lesions of the cord, whereas in the partial variety, even where total paralysis of the lower extremities is present, it may fail to

manifest itself. This is a fact which the surgeon should bear prominently in mind, since certain observers have gone so far as to rule out a cord lesion in traumatic cases where bladder and rectum have not been involved. The rule is, however, that even partial lesions of the cord are accompanied by *retentio urinæ*. In such cases it may require a searching examination to prove that the crush of the cord is not total by showing that the bladder palsy is in itself only partial. The fact is that in partial lesions with urinary and alvine incontinence complete sensibility of the bladder, rectum and anus may be preserved. Furthermore, this sensibility of the bladder and urethra, together with that of the rectum and anus, may, like that of the other paralyzed parts, be markedly increased, so that very painful calls to urinate or defecate may be experienced, although the contents of the bladder and rectum cannot voluntarily be voided. This is due to irritation of certain fibres in the cord.

Priapism is a fairly constant accompaniment of high transverse lesions of the cord; in fact it may be said never to fail in young individuals with such lesions. It is, on the contrary, very seldom an accompaniment of partial lesions and may be absent, even where total paralysis of the lower extremities exists. Spontaneous painful erections, however, sometimes occur in the course of partial lesions of the cord, and indicate a hyperesthesia in the territory of the urogenital nerves. When true priapism does occur, its rapid disappearance, like that of urinary retention, is a strong point in favor of a partial cord lesion.

The above differential aspect of the nervous symptomatology has been given in detail on account of its paramount importance in the question of prognosis as well as of treatment, but before speaking more fully on these two points a further word with regard to differentiation of the spinal lesion *per se* is necessary.

The determinate factor in the diagnosis of distortion as against fracture or luxation of the spine is the absolute failure to discover, either on examination through the mouth or by thorough palpation of the spine from all sides, any change in its contour or abnormal mobility. Occasionally the surgeon can at once come to the diagnosis of distortion by finding that the neck movements which cannot be performed at all voluntarily may be executed in all directions passively, although with great pain.

In hysterical paralysis of the neck muscles every position of the head may occur which is found in distortion and luxation, and as this form of paralysis is often attributed to injury, the danger of mistaking it for a spinal traumatism is apparent. As it occurs most frequently in young children and is usually accompanied by other stigmata of the psychosis, a close analysis of the circumstances under which it has arisen and a careful search for the other stigmata will often serve to differentiate.

Even so chronic a process as carious spondylitis is often referred to a recent traumatism, and the surgeon may be misled by the position of the head, which may simulate that observed in distortion and luxation, into thinking that he is dealing with one or the other of these affections. Differential factors of importance are the slighter intensity of the pain in spondylitis and the generally tuberculous *habitus* of the patient.

The writer recalls a particularly interesting personal experience where a rotation position of the head, together with right brachial monoplegia, followed the backward fall of a child out of a toy cart. As the child was alleged to have been well previously, the diagnosis of distortion with nerve-root injury was first made. This was subsequently changed, owing to the further course of the case, to cervical caries. The child died some weeks later and the necropsy revealed a glioma of the cord at the level of the affected nerve roots.

There still remain to mention such possible sources of error as the acute inflammatory processes in the neck: deep cervical phlegmona, burrowing abscesses from otitis and the parotid inflammations; all of which occasionally give rise to the holding of the cervical vertebræ observed in distortion.

As has been hinted, the accuracy of the surgeon's prognosis in distortion is infallibly commensurate with the thoroughness of his physical exploration. One might even say that the outcome of a given case is capable of being forecast with almost mathematical precision. If the spine alone has been injured, the pain and stiffness will usually disappear and the patient be able to perform the accustomed movements within a short time. If, however, the injured individual be of tubercular taint, it will be found not infrequently that the acute process after a time passes over into a more chronic one; and here the surgeon, granting that his examination has been sufficiently searching to enable him to rule out absolutely both fracture and dislocation, may be practically certain that he is dealing with a complicating tubercular spondylitis, since such complication is far more common after distortion than after the severe forms of spinal injury.

If nerve or nerve root injury is the only primary complication, one merely needs to alter the prognosis in accordance with the time-law regarding the recovery from a peripheral neuritis of limited extent. Finally, knowing as we do that where the cord is involved the lesion lies primarily in the central gray matter, one has only to estimate the ultimate damage as of this gray matter simply, and may safely regard the phenomena resulting from disturbance of neighboring tissue as transitory.

The treatment as regards the spine proper is perfectly simple and consists of rest in bed with support and immobilization of the neck, with very slight extension of the spine. This may be necessary for a period varying from a few days to three or four weeks. In the tubercular it should be kept up until every vestige of pain and impaired mobility has entirely disappeared.

The two cases which follow were seen by me at the Boston City Hospital within four months of each other, and I take this opportunity to thank Drs. Cushing and Thorndike, on whose services they occurred, for the liberty to report them. Their chief interest centres in the fact that, besides the spine, nerve roots only were injured and that the lesion in the two cases differed practically only in the degree of severity. In both instances the accident occurred while the patient was intoxicated, and the mechanism of the injury (hyperflexion of the head in falling) was in all probability the same.

Case I. Male, sixty-five years, first seen by me June 9, 1899. The rather unsatisfactory history given by him was as follows: Eight days previously, after drinking more or less whiskey, he had fallen

backwards down several stairs, striking the back of his head and shoulders. He was unconscious several hours, and when he came to he could move his legs perfectly, but could not rise on account of the pain in his back. His arms he could not move freely, but had more control of the right than the left. He had lain in bed ever since, and during this time had had no trouble with his sphincters, but his neck had been very stiff and sore and he experienced pain in the left shoulder, and paresthesia in both arms. The shoulder was still painful.

Physical examination showed a fairly well developed and nourished individual of good color. The pupils were equal and regular, and responded normally to light and to accommodative efforts. The ocular and facial muscles were normal; the tongue, covered by fairly thick whitish coat, protuded straight. On the left shoulder were still visible remains of an ecchymosis. The spine showed no abnormality on exploration through the mouth or otherwise. Pressure over the region of the sixth cervical vertebra was, however, painful, and flexion and extension of the head elicited pain in this region. The holding of the head was not characteristic. In the upper extremities the only movements possible were elevation of shoulders, adduction and abduction of arms, flexion and pronation of forearms. The grasp on both sides was practically *nil*. The lower extremities were of good strength, the deep and superficial reflexes within normal limits. Sensation in all forms normal. The temperature was 99.2° on entrance and ranged from 98° to 99° throughout. The pulse varied from 60 to 88.

My diagnosis was distortion of the spine with symmetrical injury of the motor roots of the seventh and eighth cervical and first dorsal nerves; and rest in bed with immobilization by plaster was advised.

A note made by house officer three days later reads: As patient was soon free from pain and could move his head from side to side without difficulty it was decided to do nothing.

Subsequent notes are as follows: On June 16th, general condition improved. Moves both arms better, and grasp has increased in strength. Takes nourishment well. On June 20th, improving daily. Strength in arms much better; no pain. On June 24th, sitting up; feels all right. On June 30th, patient up and about ward. Movements of arms and grasp slightly, if any, restricted. Discharged. Total stay in hospital, twenty-one days.

CASE II. Male, thirty-nine years, admitted October 10, 1899. Family history negative.

Previous history. — Was in this hospital twelve years ago for typhoid; gonorrhea seven years ago; denies syphilis; alcohol to excess.

Present illness. — Last night while intoxicated he attempted to get off a moving electric car and fell backward, striking on the back of his head. Was taken to police station in the ambulance and transferred here this morning. He complains of loss of power in his arms and pain in backs of forearms and tips of fingers.

Examination by Dr. Eddy (house officer) on admission is as follows: "Well developed and nourished. Lies on left side with head turned to left. Skin warm and dry. Alcoholic odor to breath. Pupils equal and moderately enlarged; react to accommodation but not to light. Scalp wound over right parietal eminence. Holds neck stiffly inclined to left side. Tenderness along cervical spine as far as seventh vertebra. Over fourth, fifth and sixth this tenderness seems more marked and is most intense on either side of the spinous processes. All motions of upper arm accomplished, but not freely. Sensation normal; lower extremities normal. Knee-jerks lively, with ankle clonus on right. Case seen shortly after noon by Dr. Courtney and the following dictated: 'Patient in bed breathing quietly, the thorax moving with respiration. Position of head same as noted above. Pupils regular and equal, moderately dilated and respond sluggishly to artificial light; normally to accommodative efforts. Tongue, facial and ocular muscles normal. The shoulder and upper-arm movements are executed normally on both sides, the only paralysis being in the groups supplied by the seventh and eighth cervical and first dorsal nerves, namely, the extensors of wrist and fingers, the extensors of elbows, the flexors of wrists and fingers and the small muscles of the hands; this being more marked on the right. The lower extremities retain full power and motion. The deep and superficial reflexes are within normal limits except that patellar twitch, together with a spurious clonus, the latter not constant, are present on the right. Sensation is absolutely normal throughout, and the bladder and rectum are not affected so far as known. There is marked tenderness to pressure over the cervical region as noted by Dr. Eddy, but no deformity of the spine is discoverable either by digital palpation through the mouth or otherwise. Temperature 99.5°, pulse 60.'"

A diagnosis of distortion with injury of the above-indicated spinal roots was made, and immobilization of neck with sand-bags advised.

Seventeen days later I examined the patient, who was still in bed. He still complained of pain in the backs of his forearms and finger-tips, but not so much as formerly, especially on the left. All movements of the left arm and hand could now be executed with some strength, although there was evident atrophy of the interossei, the abductor indicis and the thenar and hypothenar groups. On the right the atrophy was much more marked and all movements were just barely possible. A moderate degree of flexor contraction was also present on this side, involving more particularly the middle, ring and little fingers. Sensation was normal. Quantitative changes to faradism were present in the extensors of the right wrist and fingers and in the atrophied small muscles, and were much more marked on the right. The neck could be moved, but not freely without pain. Five days later the condition was about the same. The pain in the spine still continued to trouble him, and he had fainted the day before on attempting to sit up in a chair.

A note made in hospital records November 7th says simply: Patient has been up for the past few days. Discharged to Long Island.

The total stay in hospital in this case was twenty-eight days. During this time the range of pulse and temperature was practically the same as in the first case reported.

Through the kindness of Dr. Taylor, I was enabled to examine this case at Long Island nearly three months later. I then found him still complaining of some pain in the same regions as before, but he said that it came only at times. The arms I found to be

practically normal in strength and the grasp powerful. The atrophied muscles had nearly regained their normal volume and the flexor contracture of the fingers had entirely disappeared. I made no electrical tests. As for the spine, I could elicit no pain on pressure, and restriction of movement was absent, but extension of the head was somewhat painful. The deep reflexes were lively but within normal limits, and the gait, station and pupils were all right.

THE CONSERVATIVE OPERATIVE TREATMENT OF FIBROIDS; REPORT OF THREE CASES.[1]

BY W. L. BURRAGE, M.D., BOSTON.

CASE I. ABDOMINAL MYOMECTOMY; REMOVAL OF ELEVEN SUBPERITONEAL NODULES AND RIGHT OVARY, WEIGHING TOGETHER ONE AND ONE-HALF POUNDS.

K. R., twenty-seven years of age, single, American, entered the Carney Hospital in February, 1898. She complained of almost constant backache and headache and occasional crampy pains in the left lower abdomen, which she had had for the preceding two years. Two months previous to entrance she had noticed a bunch in the right lower abdomen, and this had increased in size since her attention had been first attracted to it. With the above exceptions, her general health had been good, and she had been able to follow her occupation of laundress. The catamenia began at fourteen, had been regular, painless, of three days' dufation and moderate flow.

Physical examination showed a well developed and nourished girl. Abdominal walls of moderate thickness, and soft. In the right lower abdomen, midway between the median line and Poupart's ligament, could be felt a hard mass, which raised the abdominal wall a little; in the left lower abdomen a similar but smaller mass; both extremely hard. The cervix was somewhat low in the pelvis and the uterine cavity measured two and one-half inches in depth. The crampy pains were referred by the patient to the upper margin of the mass on the left side. Considering the apparent rapid growth of the tumors and their great density, the probable diagnosis of sarcoma of the ovaries was made.

Operation, February 10th.— On incising the peritoneum a moderate amount of clear, straw-colored fluid was found in the peritoneal cavity. The two masses proved to be very dense subperitoneal fibroid nodules, united by a band of tissue and springing from the anterior and left face of the fundus uteri by a pedicle about three centimetres broad and one centimetre thick. Uterus slightly enlarged and extremely congested. To the left of the pedicle was a crop of five small nodules, the largest two centimetres (seven-eighths inch) in diameter, and on the posterior surface of the wall of the uterus, near the region of the internal os, was a nodule the size of a pea. The right ovary was enlarged to twice the normal size by cysts and a recently ruptured corpus, which bled freely. Left ovary and both tubes normal.

A piece of mesentery of the small intestine was adherent to the upper aspect of the left-hand mass for a length of seven centimetres (two and three-fourths inches) and a breadth of two centimetres. The capsule of the tumor was incised along the border of the mesentery, and the mesentery and a portion of the capsule sponged off the tumor; oozing in the mesentery controlled by a continuous catgut stitch. There were no other adhesions. The different nodules were successively enucleated by incising the capsule at one side and shelling out the tumor with the handle of a scalpel, and as fast as one was out the bleeding bed was closed in by a continuous suture of chromicized catgut No. 1, passing the stitch deeply at first and ending by a superficial suturing. The hemorrhage was lively until a stitch or two had been passed. The large nodules were left until the last, but the sutures effectually controlled the oozing from the broad base. The right ovary was removed after tying the broad ligament at the hilum of the ovary with a shoemaker's stitch. The uterus having been crowded down in the pelvis by the tumors, it seemed best to suspend it to the abdominal wall, and this was done by passing two sutures of chromicized catgut No. 2 through the fundus from side to side and through the peritoneum and transversalis fascia. The wound in the abdominal wall was closed with tier sutures after the method of La Torrê.

The nodules and the right ovary weighed together one and one-half pounds. The largest nodule measured nine centimetres (three and one-half inches) in its long diameter and the next largest, five and one-half centimetres (two and one-fourth inches); the knife went through their structure with great difficulty, and the cut surface showed glistening white bundles of fibres, with very little intercellular substance. The pathologist, Dr. E. H. Nichols, of the Harvard Medical School, pronounced the tumors to be fibromyomata, non-malignant.

The patient made an uneventful convalescence. I saw her in May, 1898, and she was then fat and well. She still had some backache but was able to be at work. The uterus was small and in good position, and there was firm union in the abdominal wound.

CASE II. VAGINAL MYOMECTOMY; REMOVAL OF FIBROID NODULE, THREE CENTIMETRES (ONE AND ONE-FOURTH INCHES) BY ONE AND ONE-HALF CENTIMETRES (SEVEN-EIGHTHS INCH), OF SUBPERITONEAL EVOLUTION FROM THE FRONT WALL OF THE UTERUS BY ANTERIOR COLPOTOMY.

Mrs. C. McC., thirty years old, entered St. Elizabeth's Hospital, June 26, 1895. She had been married two years but had had neither child nor abortion. She had had constant pain in the left inguinal region for several years, but since marriage it had been very much worse. The pain was exaggerated when she was on her feet and when the catamenia were present. She also complained of headaches, worse at the periods, and of leucorrhea. The catamenia began at seventeen, were irregular, of three to four days' duration, and she used five napkins.

Physical examination showed a well developed and nourished woman. The uterus was large, four inches deep, the body sharply anteflexed, and the cavity very capacious. On the anterior face of the anteflexed body was a fibroid nodule some three centimetres (one and one-fourth inches) long and one and one-half centimetres thick (five-eighths inch), to be distinctly made out by the examining finger in the vagina. Left ovary low in position.

[1] Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, December 27, 1899.

Operation, July 1st.— Canal of the uterus easily dilated. Curetting brought away a large amount of fungous tissue, mostly from the posterior wall of the uterine cavity. Irrigation and light packing with gauze. A transverse incision three centimetres (one and one-fourth inches) long was made in the anterior vaginal wall, two centimetres (seven-eighths inch) from the crown of the cervix, and the cellular tissue between the bladder and uterus dissected until the fibroid nodule was reached. The nodule was well embedded in the middle of the anterior face of the body nearly at the fundus. It was seized with double hooks and enucleated. There was a lively hemorrhage from a vessel on the left side, which was finally controlled by forcipressure and gauze packing, and the raw surface was closed by a continuous stitch of catgut and the vagina by a submucous stitch of the same. The peritoneal cavity was not opened.

The patient had an uninterrupted convalescence, the gauze being removed from the uterus on the third day, and she went home in ten days. She was seen again on October 19, 1895, and the following note was made of her condition at that time: Now has only slight pain in the left groin; vertical headache and dyspepsia; there is a plug of tenacious mucus in the os uteri; perfect union in the vaginal wound; no tenderness of uterus and canal patulous.

CASE III. MORCELLATION OF SUBMUCOUS NODULE AT FUNDUS, AND POLYP WITH PEDICLE SPRINGING FROM FUNDUS.

M. D., single, forty-eight years of age, was seen in consultation with Dr. G. N. Jones, of Gloucester, December 14, 1896. She gave the following history: Father died of heart disease, otherwise the family history was negative. Had always been well, with the exception that she had suffered all her life with excessive flowing at her monthly periods, and at times she had had some frequency of micturition, but never enough to necessitate getting up at night. It is to be mentioned that she had had facial erysipelas three or four years before. The catamenia had been regular every twenty-one days up to a year before. At twenty-one years of age she soiled fifteen napkins at each period; at twenty-five years, seven napkins; after that never less than twelve. For the last five or six years she had used from thirty to fifty napkins and was weak from the loss of blood. When young she had a great deal of pain with the periods. Latterly had been obliged to give up her position, which necessitated standing, a place she had held for twenty-five years, because of the flowing. Five years ago she had a hemorrhage lasting a week, in February, 1895, another, and six weeks ago a third, and since then she had soiled three or four napkins every day. For five or six years she had had a watery, unirritating vaginal discharge when not flowing. She also complained of palpitation, headaches and pain about her heart.

Physical examination.— A well developed and nourished woman of average height, very pale and sallow; pulse wiry and rapid; urine negative; heart negative. Uterus retroverted in the second degree, freely movable, large, and of irregular outline; cervix small, and in the os, which was the size of a finger tip, could be felt a polyp. Examination with the sound showed that the pedicle of the polyp was situated well up in the uterine cavity, which measured three and three-quarters inches in depth. Vagina narrow.

Ether was administered by Dr. Jones. The cervix was dilated with the Wathen uterine dilator and the polyp was seized with a double hook forceps and twisted until it came away. It measured one and one-half by three centimetres (five-eighths by one and one-quarter inches). Very little hemorrhage. Further dilatation of the cervix was obtained and a finger introduced into the uterus for purposes of exploration. It was evident that the pedicle of the polyp had sprung from the right side of the fundus, and furthermore that there was situated alongside of the stump of the pedicle a submucous fibroid nodule the size of a large pea. Much difficulty was experienced in reaching the fundus with the finger, because of a tight contraction of the uterine tissues in the body of the uterus about the small pedicle of the polyp. In other words, the body of the polyp had dilated the lower uterine canal, but the upper part of the canal closely hugged the small-calibred stalk of the polyp. The constricted portion was so far from the external os that it was hard to dilate. The stump of the polyp and the submucous nodule were removed piecemeal with polyp forceps, Emmet curette forceps and the Sims sharp curette, and the rest of the uterine cavity curetted. This is a case where my uterine cutting forceps would have been extremely useful, in fact, it was one of a series of cases which led me to devise the cutting forceps a year later. There was no hemorrhage to speak of. The cavity was swabbed with pure carbolic acid after irrigation with weak corrosive solution, the uterus replaced in its proper axis in the pelvis, and the vagina packed with iodoform gauze.

In February, 1897, Dr. Jones told me that the patient had done well in every respect. The uterus remained in place without a pessary and there had been one normal catamenia since the operation was performed.

These three cases have been selected as illustrating the different sorts of conservative operations on fibroids which have fallen under my observation. There is still another sort, the morcellation of large fibroid nodules of submucous evolution, which will be considered by the gentleman who is to follow, from his large experience with this class of cases.

It is my belief that all operations on the uterus and ovaries and tubes should be conservative in the strict sense of the word. It is a greater glory to patch up a diseased organ, to put a crippled member in fair working condition, or at the least prevent it from being a menace to the health of the rest of the economy, than it is to remove an organ because it may cause trouble in the future. During the menstruating life of woman the uterus should be removed only when it is the seat of an ineradicable disease. Fibroid tumors should not be so classed unless they distort the uterus excessively or invade its tissues to such an extent that the uterine cavity cannot be preserved while at the same time the tumor is taken away.

In cases in which fibroids cause symptoms necessitating operative treatment it is my custom to remove the tumors either through the uterine cavity, through the vagina or through the abdomen. I think that most patients are better off even if all the nodules are not found and the operation is not complete, than they are with their entire uterine organs gone. I do total ablation in young women as a last resort and with great reluctance.

During nearly every myomectomy operation some

one among the spectators says, "May not other fibroid nodules develop where these have been removed; may there not be other foci that have been overlooked? Would it not be much wiser to do hysterectomy?"

To this I say, "Suppose they do develop. They are benign growths and may be operated upon at a later day should they cause symptoms. We do not remove the scalp because wens grow in it, nor the brain when it is the seat of tumors. We are satisfied with eradicating the tumors and preserving the function of the organ. In the case of the brain such a course is imperative. Isn't there too much of a tendency among operators to consider the uterus an unnecessary organ because it may be removed with comparatively little danger to life?"

In patients who are near the menopause or who have passed it, hysterectomy is preferable to myomectomy, because the uterus ceases to be of any great importance in the body after the change of life. When the cervix is torn or shows signs of disease, I make it a rule to remove the entire uterus in patients near the menopause. In younger women I prefer to repair a torn cervix and remove fibroid nodules by myomectomy rather than sacrifice the uterus.

As to the technique of myomectomy I have little to say. Dr. Howard Kelly has devised several dissecting spuds for use in shelling out the tumors. I have tried one of them and found it very useful for this purpose. Two years ago I invented a uterine cutting forceps for removing pedunculated submucous nodules situated at the fundus uteri and for use as a vulsellum forceps in the removal of large fibroid nodules of soft texture, tissue which it is impossible to hold with ordinary vulsella or hemostatic forceps. These forceps I have employed in both classes of cases and have found them to be a very valuable addition to my armamentarium.

The continuous stitch of catgut has proved efficient in controlling oozing after the enucleation of the tumor. Sometimes two or even three tiers of sutures have been necessary in the case of a tumor situated deeply in the uterine tissues. It is essential that all wounds in the uterus should be carefully closed.

I have found that it is sometimes possible to enucleate several nodules through one incision in the peritoneum covering the uterus, by burrowing along a trifle under the peritoneum.

As regards the best mode of approaching these tumors, my rule is as follows;

(1) If the tumor is of small size, of submucous evolution, and projects into the uterine cavity, dilate the uterine canal by a series of sterile laminaria or tupelo tents placed in the canal under strict antiseptic precautions, beginning twenty-four hours before the time set for operation. In this way a more thorough and more gradual dilatation is obtained. Thorough dilatation avoids splitting the cervix, a procedure absolutely necessary in the case of a long and rigid cervix when rapid dilatation is attempted. Splitting the cervix is often an unnecessary mutilation, and, in the case of sloughing fibroids, it offers a fresh cut surface for septic absorption. If time does not serve for gradual dilatation dilate when the patient is under ether with the stout steel dilators until the canal will take the operator's finger. Remove the tumor by twisting, snaring or by morcellation, according to its situation and character.

(2) If the tumor is of subperitoneal or subvaginal evolution and is in the cervical region, and the vagina is of good size, perform either anterior or posterior colpotomy and enucleate the tumor without opening the peritoneum, if possible, closing the incision with buried sutures of catgut.

(3) If the tumor is of subperitoneal evolution in the region of the fundus, and in all other cases, open the abdomen, incise the capsule of the tumor along one side and enucleate it; then close the bleeding surface left with buried continuous sutures of catgut.

At the present time I seldom have occasion to do curetting without other operation in fibroids. Steaming of the uterine cavity in fibroids is not advocated by those who have had the most experience with this method of treatment.

Electricity, if it may be classed as an operative mode of treatment, is of use in relieving hemorrhage and pain, but has no lasting effect on the tumor.

Removal of the tubes and ovaries to produce an artificial menopause has been abandoned as an operation in fibroid tumors, since it has been determined that the menopause does not always cause a shrinkage, but on the contrary the tumors continue to grow in some cases after the change of life.

Ligature of the uterine arteries through the vaginal vault has been advocated and practised by a few operators, with the purpose of cutting off the blood supply of fibroid tumors. Although it is reported to have given good results in certain cases, we ought not to expect very much from it, because of the abundant collateral circulation of the uterine organs. We often find the ovarian artery larger than the uterine in these tumors, and occluding the uterines would, in all such cases, lessen the blood supply to the tumor less than half.

In discussing the question of myomectomy we must bear in mind that in a large proportion of cases of fibroids there is also a certain amount of disease of the ovaries and tubes, especially the former. Those who advocate hysterectomy in all cases put this fact forward as an argument in favor of hysterectomy. In an abdominal myomectomy it is possible to resect a diseased ovary or tube, or to remove a badly diseased one at the same time that the tumor or tumors are enucleated, leaving at least a piece of an ovary, and this, to my mind, is an argument in favor of myomectomy.

To the argument that there may be more hemorrhage in myomectomy than in hysterectomy it may be said that the hemorrhage may be controlled by an elastic ligature about the cervix during the process of enucleation. Such elastic compression is indicated where a very large nodule is of intramural evolution and firmly embedded in the uterine tissues. Even in those cases where a large nodule encroaches on the uterine cavity, and in its removal it becomes necessary to remove a portion of the endometrium, I am in favor of myomectomy if the major portion of the endometrium can be preserved.

In contrasting myomectomy with hysterectomy, I think we must admit that myomectomy is the more difficult operation and requires a higher degree of skill for its successful performance, and would, other things being equal, take a longer time, depending on the skill and experience of the operator. We should bear this in mind in operating on a weak and exsanguinated patient.

TWO CASES ILLUSTRATING CONSERVATIVE OPERATIONS FOR UTERINE FIBROIDS.[1]

BY R. A. KINGMAN, M.D., BOSTON,
Visiting Gynecologist to Carney and St. Elizabeth's Hospitals.

THE attitude of the medical profession toward fibroid tumors during the past twenty years has shown repeated fluctuations between conservatism and radicalism. At the beginning of that period, the general opinion was that fibroids were rarely of sufficient importance to demand more than palliative treatment and usually atrophied after the establishment of the menopause. Later, with the increasing ease and safety of operative treatment, hysterectomy and myomectomy came rapidly to the front in the estimation of the leaders in thought and action. Then came the teachings of Apostoli as to the possibilities of electricity in curing, or at least relieving symptoms, and a halt was at once called in the progress of the radical operation. Again the pendulum swung and hysterectomy was perfected almost to the point of absolute safety. At least it was made as safe as electrical treatment and, of course, vastly more certain in its results. Having conquered this field, operators are now striving to attain a still higher goal, by trying to cure rather than to sacrifice, — to conserve rather than to remove organs.

It is not the province of this paper, as it is not the intention of this evening's discussion, to decide in what class of cases operation shall be undertaken, nor is it intended to consider the general subject of fibroid tumors in any of its aspects. We are here to seek light upon this higher ambition; to learn if possible to how great an extent and under what conditions and limitations, the essential organs of generation may be spared, while removing the actual disease and restoring the patient to health and functional activity.

Personally, I do not intend to consider castration in this paper, though formerly I practised this operation to a limited extent with success and satisfaction, because the old reasons for that operation can almost never be found operative in the present day, and because it violates the fundamental principles which underlie this present goal. It sacrifices important organs and puts a stop to functional activity.

It is my purpose merely to cite two cases, illustrative of the possibilities and advantages of the conservative operations, each being a simple case of single fibroid, which yet seemed to present such difficulties in the way of removal as to suggest the necessity of hysterectomy.

The first case is that of a young lady thirty years of age, whose only complaint was of menorrhagia, as a result of which she was completely blanched. She had previously been curetted by a member of this Society, without benefit. The uterus was found moderately enlarged, globular, and with nothing to indicate the location of the small fibroid which was suspected to be the cause of her trouble. After entering the hospital, the cervix was dilated with laminaria tents so as to admit the forefinger. At the fundus there existed a slight convexity, which was the only indication of the presence at that point of the small fibroid. It was at once evident that while the fibroid was small, its location, together with the narrowness of the vaginal and cervical canals, rendered it exceedingly difficult of removal by any of the ordinary means. It was for just such a case as this, however, that Dr. Burrage designed his morcellation forceps, which he exhibited to this Society about two years ago. With these forceps it was possible to completely remove the fibroid inside of five minutes, without risk of perforating the uterus and practically without shock. The patient left the hospital well inside of two weeks, and since that time has been absolutely free from symptoms.

The second illustrative case is in many respects identical with that reported by Dr. Washburn before the Obstetrical Society and referred to this evening. The patient, Mrs. T. H. L., was thirty-eight years of age, and had been married three and one-half years without having had children. Her symptoms were not very definite, consisting of flatulence, persistent constipation, with increasing pain and soreness in the lower abdomen, where for the past year she had at times noticed a hard bunch, now evidently increasing in size. Menstruation was regular, without excessive flow and with only moderate pain. She felt that she was losing ground and found that she tired easily upon exertion.

Upon examination the uterus was found uniformly enlarged, the cervix being deep in the pelvis and the top of the mass at the level of the umbilicus. The mobility was much diminished.

Owing to desire to have children, it was agreed that myomectomy should be done if possible, and this operation was accordingly performed at St. Elizabeth's Hospital, April 28, 1899. Upon opening the abdomen it was found that the only indication of the locality of the fibroid, as distinguished from the uterus itself, was the fact that the tubes entered the mass on its anterior face. Splitting the uterus and capsule on the back of the mass, the former was found to be only from an eighth to a quarter of an inch in thickness. The tumor was rapidly enucleated with the finger, not more than three or four minutes being required and no hemorrhage occurring during that time. There was an opening made into the uterine cavity about the size of a half dollar. Almost immediately the tumor cavity began to ooze, the hemorrhage becoming rapidly excessive. A rubber tourniquet was thrown around the lower part of the uterus, while the cavity was closed with buried sutures of chromicized catgut. The opening in the mucous membrane was closed with two mattress sutures, the rest of the cavity being obliterated with four or five layers of continuous suture. When the peritoneal surface was reached, the tourniquet was removed to see if the bleeding was controlled, but to my surprise the hemorrhage seemed more free even than at first. The tourniquet was at once reapplied and, even though I expected to be compelled to remove the uterus, I put in a continuous superficial suture of catgut. Again loosening the tourniquet no hemorrhage occurred, and throughout the remainder of the operation the wound did not ooze a drop. Both ovaries were much enlarged and were cystic throughout, but by careful resection a small portion of comparatively healthy ovarian tissue was saved on each side. The tubes were somewhat hypertrophied, but were otherwise normal.

Convalescence was rapid and without special incident. For two months after the operation the patient was given small doses of ergot and hydrastis. On

[1] Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, December 27, 1899.

June 16th, examination showed the uterus to be decidedly smaller and more freely movable. There was slight tenderness about the right ovary, but nothing abnormal could be discovered. The patient's general condition was good. She was seen twice in September on account of a mild attack of indigestion. All pelvic symptoms had ceased, menstruation was regular, normal in amount and without pain. The uterus showed only slight enlargement, was in normal position, and nothing could be felt in the pelvis to indicate that any operation had been done.

These are only two cases selected from a considerable number in each class, to illustrate in a concrete manner the nature of the difficulties to be overcome and the great subsequent advantages to be anticipated in cases permitting such conservative work.

Concerning the scope and limitations of vaginal work I have little to say, as there is little to be gained by opening a discussion which is likely to lead only to a ventilation of partisan championship, but within certain limits harmony of teaching and practice ought to be possible. We can at least all agree that submucous pedunculated tumors can be best removed *per vaginam*. These can commonly be twisted off and removed, either with or without morcellation. But to how great an extent can submucous sessile fibroids be removed by the same route? I believe that the percentage of cases in which this procedure should be elected could be much increased were digital exploration of the uterine cavity more frequently employed. In past years, so strong an aversion to tents was justly acquired, that even now the profession will rarely consent to their use. Probably many present in this room have never inserted a tent, and yet it is impossible to rightly diagnose certain cases without the advantage of digital exploration which they offer. I have examined a case in consultation with a colleague, preliminary to a hysterectomy, in which a tent inserted at my suggestion made it possible to locate and easily enucleate the submucous fibroid which had been the cause of the persistent hemorrhage from which the patient sought relief.

Submucous fibroids of even many pounds' weight can usually be removed by the vagina, by morcellation and enucleation. For use in this connection, the forceps devised by Dr. Burrage cannot be too highly commended. It adds almost perfect safety to great efficiency, for while it will not wound a flat or concave surface, it will cut or strongly seize any projecting mass. It can therefore be used unguarded by the finger, in places where it would be dangerous to use knife, scissors, spoon saw, or curette. The only bad result which I have seen follow such removal of fibroids was due to iodoform poisoning and in no sense the result of the operation. The gauze packing was really unnecessary and the alarming symptoms following it taught me a useful lesson.

Through the abdomen we ought to be able to remove simple pedunculated fibroids and fibrocystic tumors, regardless of their size. Upon this all will agree. It will also be agreed, probably, that small, subserous nodules, unaccompanied by deeper tumors, and in the absence of serious disease of the appendages, should be treated by myomectomy rather than by hysterectomy.

On the other hand, there can be no question that in the presence of such a mass of tumors as to obliterate all evidence of a uterus; when the uterine tumors are complicated by the presence of suppurative disease in the pelvis, or by such disease of the appendages as to demand their removal; in the presence of certain grave diseases elsewhere, such as phthisis or valvular heart disease; and in patients past the menopause, hysterectomy should be the operation of election.

Aside from the conditions mentioned above, each case must be judged upon its own merits, with the inclination always strongly towards conservatism. Especially in *young* women should our endeavors be towards the preservation of functional integrity of the pelvic organs. Neither size nor number of tumors should be necessarily a bar to this attainment, nor, in my opinion, should the fact that at a single sitting we cannot entirely clear the uterus of nodules compel the sacrifice of that organ.

In the case mentioned as having suffered from iodoform poisoning, I believe there is now present in the uterus at least one small fibroid, but the young lady is still at her studies, with life before her, and looking forward with fond anticipation to marriage and maternity. Rather than at once and finally to renounce such hopes, she would gladly submit to many such operations.

As for the operation itself, the preparation is the same as for hysterectomy, and few difficulties are likely to present themselves which are not common to other abdominal operations. The chief danger, both during and after the operation, is from hemorrhage, so that careful closure of all uterine wounds must be our especial duty. The cavities left by the tumors must be sealed from bottom to top by buried sutures of catgut, any points of arterial hemorrhage being ligated with the same material. The table should be lowered to the horizontal position for a sufficient length of time before closing the abdomen to enable the operator to assure himself that all oozing is permanently checked. During the operation it is often necessary to use a rubber tourniquet about the cervical portion of the uterus, so permitting a bloodless operation, but it should be borne in mind that hemorrhage is very liable to recur upon the restoration of the blood pressure in the severed vessels, and exceptionally careful closure and prolonged inspection of such wounds is demanded.

The frequent association of ovarian disease with fibroid tumors will make it necessary at times to resect, or do other conservative operation upon one or both ovaries, for it must not be forgotten that removals of the new growths will be followed by uterine involution and by greatly improved conditions in the appendages as well. Do not be afraid to trust nature in this respect, for it is astonishing how much she can both do and undo when given opportunity.

A PECULIAR CASE OF ADENOCARCINOMA OF THE BODY OF THE UTERUS.[1]

BY AGNES C. VIETOR, M.D.,
Assistant Surgeon, New England Hospital, Boston.

A LADY, sixty-seven years old, widow, mother of two children, passed uneventfully through the menopause at the age of fifty-four, thirteen years ago. The pelvic organs apparently became perfectly quiescent, there being no leucorrhea — nothing to make the pa-

[1] Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, December 27, 1899.

tient conscious of their existence. She was also perfectly well in general health. This state of affairs continued for nine years, then, about four years ago, she noticed a slight show every now and then, lasting a few days. Being unusually well-informed of the possibilities of danger in any irregular pelvic manifestation at her time of life, she consulted a well-known gynecologist of this city, telling him she was about to go to Europe for a couple of years, but that she would change her plans according to his advice. She says he curetted her in his office without an anesthetic, and reported that "examination showed there was no cancer," and that she might go to Europe as she wished. This she did, the slight show continuing.

After about a year, she one day had a free flowing which made her feel a little weak; this free flow returned about every three months; then, gradually, the interval decreased to once a month; later, a moderate flow continued all the time, day and night. April 1st of the current year, the flow amounted to a hemorrhage, which lasted three days and caused great prostration, from which she never fully recovered strength, flesh or color. After this hemorrhage, the colleague mentioned again curetted her as before, and again reported that "examination showed there was no cancer."

Coming under my care in August, I found the patient a little pale but not cachectic, giving an impression not of feebleness but rather of limited strength. She gave no general symptoms except the slight tissue changes in the direction of emphysema and endarteritis to be expected at her age. The urine was negative. She said she felt perfectly well, only weak and tired of the annoyance of the flow. I give this condition of hers rather in detail because I think it cannot be too much emphasized that this is an everyday picture, and that it is a terrible tragedy that both physicians and patients look upon it as an instance of the vagaries of "change of life."

Examination of the pelvis showed a fair discharge of dark red blood, having a little the odor of normal lochia. The vagina was large and rather short, with senile, thinned walls. The uterus was softer than normal, symmetrically enlarged and markedly retroverted, but freely movable; on attempting to measure the canal, the internal os appeared closed. Combined abdominovaginorectal examination showed a hard, nodular tumor, about one-third the size of my fist, apparently springing from the posterior wall of the body of the uterus, extending up into the fundus and projecting backwards into the cul-de-sac; it was not sensitive and apparently not adherent to the neighboring tissues. The appendages were not palpable.

The first peculiarity of this case began with this examination. With the left hand on the abdomen, the right forefinger in the vagina and the right middle finger in the rectum, the pelvic organs are as clearly grasped by the examiner as is possible, and given a lax abdominal wall, the diagnostic opportunity is almost ideal. It seemed ideal in this instance, and I cannot imagine anything clearer than the outline of this uterus and tumor as it lay between my two hands.

I fully explained possibilities to the patient, but postponed a positive opinion till our next consultation. In the meantime, I put her on a form of treatment which I am testing in every case of uterine fibroids where operation is not urgent, and the results of which I hope, at some future date, to report to this Section. I refer to the use of the tablets of mammary substance to which Dr. Shober, of Philadelphia, has drawn attention. After taking these tablets for a few days, the patient began to feel, as she expressed it, more "vigor" and had a desire to go out and do things; the discharge ceased entirely at night and decreased during the day to fully half the former quantity; her face looked fuller and her color was better. On examination the tumor seemed somewhat smaller, less irregular and firmer. We again decided to use the tablets a little longer. Two weeks later the patient reported that her improvement continued, but on examination both tumor and uterus seemed a trifle larger. I then advised an immediate hysterectomy. Curiously enough, a day or two after that the flow increased to its former amount and also returned at night.

The patient entered the Baptist Hospital, and on October 4th I did a vaginal hysterectomy, Dr. Emma B. Culbertson kindly consulting and assisting. The operation was straightforward till, on attempting to deliver the fundus, it suddenly fell to pieces in my hand and I had only a handful of pieces of soft tissue. Not to take your time, I will only say that the operation was completed, and on looking at the specimen, which I show here to-night, I was amazed to find the posterior wall of the uterus perfectly smooth and regular, with no sign of a tumor. On examination, I found the tumor was on the anterior wall and projected into the uterine cavity; the posterior wall was converted into a mass of tissue so soft that it slid away from the depressing finger and left only the intact peritoneum to be carried over the inner surface of the tumor, encasing the examining finger like a glove. It was this thin, enclosing bag, of the thickness of a sheet of paper, that broke at the fundus as I grasped it. In many spots the wall mass was retained only by this paper-like layer of peritoneum.

The occlusion of the internal os was due to the projection over it of the lower nodule of the tumor; this suggests itself to me as an explanation of the preservation of tension in the walls of the uterus, so that, although the walls were everywhere disintegrated, they did not give a boggy or cystic feeling, but rather the sensation of a hyperplasia that is in the infiltration stage as contrasted with the later condition of conversion of the connective-tissue cells into fibres.

The other peculiarity — the apparent temporary improvement of an adenocarcinoma of the body of the uterus under the use of mammary substance — is not an occurrence for which I attempt to offer an explanation, but an observation which I simply put on record.

The patient made an uneventful recovery and has steadily improved in strength and appearance.

Dr. W. F. Whitney's report was as follows: "The specimen from Mrs. —— consisted of the uterus and adnexa. The body was enlarged, the cavity dilated to a rather globular form, the size of a small orange. Upon opening it, the wall was found to be infiltrated by a new growth of soft, medullary aspect and rather lobulated form, projecting into the cavity as rounded and papillary, extensively necrotic masses; this growth reached almost through the entire thickness of the wall, and occupied the greater part of the fundus but did not reach to the cervix. Its general appearance was one that had started in the mucous membrane over an extensive area. Microscopical exami-

nation showed a true glandular type of growth, which had infiltrated between the muscular bundles which thus separated the glandular masses into alveoli. The epithelium lining the glands was long, quite regular and of the columnar variety. In places the gland type was obscured by solid masses of cells. The diagnosis is an adenocarcinoma. Although the uterus was covered by adhesions which bound the relatively normal tubes and ovaries down to it, there was no evidence of extension beyond the part removed."

Dr. Whitney reported to me later that the hard, nodular tumor projecting from the anterior wall into the uterine cavity was a fibroma.

Clinical Department.

A CASE OF EXTRA-UTERINE PREGNANCY, WITH OPERATION.[1]

BY FREDERICK W. JOHNSON, M.D., BOSTON,
Visiting Gynecologist, Carney and St. Elizabeth's Hospitals.

D. H. P., thirty-one, married two and a half years. Menstruation began at fourteen. Always regular; flows four to five days; has always had severe pain, confining her to the bed a few hours during the first day of the flow. Has never had any leucorrhea. Aborted two months after she was married. From that time she was perfectly regular, every four weeks, up to July 20, 1899. After going six weeks without flowing, was suddenly seized with sharp, shooting pains in the lower abdomen. She was helped home, was covered with cold perspiration, and was very pale. Four days after the attack of sharp pain in the abdomen, she began to flow, and flowed off and on, more or less, until she was operated upon, Thursday, November 9th. After the onset of the severe pain in the abdomen, she was in bed three weeks, suffered constant pain in the left lower part of the abdomen, and at the same time turpentine stupes were used to overcome the tympanites.

Some weeks after the rupture, she came to Boston and was seen by Dr. E. S. Boland, who, from the history and examination of the case, made a diagnosis of ruptured extra-uterine pregnancy, with a mass of old blood filling the pelvis. Just before leaving the hospital the patient told me that she had consulted Dr. John T. Bottomley, and that he also made the same diagnosis as Dr. Boland.

Thursday, November 9th, a laparotomy was done at the Carney Hospital. A tumor, greenish-yellow in color, the size of an orange, was found adherent in the pelvis. To this was attached the thickened right Fallopian tube. On separating the adhesions, the tumor was found to be connected with the left Fallopian tube. The left ovary, much enlarged, and nearly filled with fluid, could be distinctly seen underneath this mass. The tumor, with the left ovary and tube, was removed, the tube being dissected out of the horn of the uterus, and the horn sewed over and over with catgut. The thickened portion of the right tube, with the fimbriated end, which was closed by blood and what looked like inflammatory adhesion, was removed. This left about two inches of healthy tube, which, after removing the adhesions from the surface of the ovary, and cleaning it of adherent blood, was spread out as much as possible over the surface of the ovary, and fastened there by fine silk sutures.

After thirty-six hours her temperature never went above normal, and she left the hospital three weeks from the day she was operated on. The following is Dr. W. F. Whitney's report: "The specimen from Mrs. D. H. F. consisted of a portion of one tube and the other tube and ovary. The partial tube showed simply a little thickening and occlusion of the fimbriated end by blood clot, which was also present on the surface. The other tube was suddenly dilated into a sac about the size of a small orange, covered with clots and filled with clotted blood. The blood clots were in layers and considerably decolorized, as if quite old. At one end of the mass, quite close to the uterine end, was a little thready tissue. On microscopic examination, there were found fine branching filaments of a fibrous character, terminating in round, enlarged ends. These were similar to the chorionic villi of the first half of pregnancy. In the ovary was a large, cystic cavity filled with blood (corpus hemorrhagium). No true corpus luteum was found. The diagnosis is a tubal pregnancy ruptured in the early months."

[1] Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, December 27, 1899.

EMPYEMA OF FRONTAL SINUS.

BY JOHN D. PAIGE, M.D., SAVANNAH, GA.

This case had empyema of the antrum of Highmore on both sides, empyema of the ethmoid cells, bilateral, and empyema of the frontal sinus on the left. The antrums were opened and drained through the alveoli,

the ethmoid cells opened and curetted, the frontal sinus irrigated through the enlarged natural opening, with great relief to the symptoms and discharge. Dr. E. R. Corson, of Savannah, kindly took the accom-

panying x-ray (five-minute exposure) with the probe introduced in the frontal sinus, which shows so much better than any I have seen published that I think it will prove interesting. The loss of bone in the superior maxilla from its drilling through the alveolar process and the subsequent resorption show plainly. The dark irregular bodies in the mouth are numerous teeth fillings. The probe in the frontal sinus shows clearly, as does a small exostosis on its superior wall. The opening of the sinus through the nose would not seem so dangerous a performance as some writers would have us believe.

Medical Progress.

PROGRESS IN PUBLIC HYGIENE.

BY SAMUEL W. ABBOTT, M.D., BOSTON.

(Continued from No. 13, p. 333.)

"Public money is never more advantageously spent than in promoting and preserving the public health, an inestimable asset of the Commonwealth." — Sir Walter Foster, M.P., in an address at the opening of a new isolation hospital at Enfield, Eng., in February, 1900.

THE MANAGEMENT AND CONTROL OF INFECTIOUS DISEASES.

On Bacteriological and Clinical Diagnosis in Relation to some of the Notifiable Infectious Diseases.

Dr. J. W. Washbourn contributes a valuable paper to the *Journal of the Sanitary Institute*[9] upon this subject.

Cost of bacteriological examination for diagnosis. — Dr. D. G. Davies,[10] states the average cost of bacteriological examinations of material in cases of diphtheria, typhoid fever and tuberculosis in thirty-three London and provincial districts at two shillings and sixpence to five shillings for each examination (60 cents to $1.25).

Influence of schools in spreading scarlet fever. — Nivens,[11] Medical Officer of Health of Manchester, Eng., and Murphy, of London,[12] observe a drop in the prevalence of scarlet fever in the summer holidays. Murphy also believes diphtheria to be spread by school attendance.[13]

Typhus fever. — Littlejohn,[14] Medical Officer of Health of Edinburgh reports an epidemic of typhus, which was imported in August, 1898, and was spread by a "wake." The disease is now so rare that young medical men do not recognize it, and hence it may spread rapidly. Out of 79 cases there were nine deaths.

Diphtheria bacilli in the mouths of well persons who have been associated with the sick have been found in 18.8 per cent. of the cases examined.[15]

Mosquitoes and malaria. — The Italian Society for the Study of Malaria quotes an experiment in which a man was selected from a non-malarial district, and subjected to the bites of mosquitoes from a malarial district, with the result of infecting him.[16]

[9] London, vol. xx, Part I, p. 43, 1899.
[10] Public Health, London, June, 1899, p. 602.
[11] Loc. cit., September, 1899, p. 787.
[12] Report of London County Council.
[13] Diphtheria and Elementary Schools, London, 1898, p. 36.
[14] Public Health, September, 1899.
[15] Zeitschrift f. Hygiene, xxxi, p. 463.
[16] Centralbl. f. allg. Gesund., p. 420, 1899.

Certain Forms of Animal Life as Transmitters of Infection; Methods of Destruction.

After it has once been determined that certain animals are the vehicles of infection, attention is naturally given to the methods of destroying them. Dr. Doriga[17] contributes a paper on the "Prevention of Plague through the Suppression of Rats and Mice." "The French Government has charged the Comité Consultatif d'Hygiène with the investigation of this question. Certain navigation companies have also taken measures for the destruction of rats and mice upon their vessels. The Compagnie des Messageries Maritimes offered a bounty to their sailors for every rat caught on board.

"Instructions have been adopted by the Minister of the Interior. These instructions urge the importance of preventing the access of rats to floating hospitals and ships at the wharves, at sea, and on arrival in port. If the dead bodies of rats are found on board, a bacteriological examination must be made, and if the plague bacillus is found, the ship must be discharged, the cargo of passengers' and crew's baggage disinfected, the vessel fumigated throughout and the dead rats burned."

Mereshkowsky[18] has studied the question of infecting rats and mice with destructive bacilli other than those of plague, with a view to their extermination.

Abel[19] also has experimented in the same direction. It was found necessary to discriminate between wild species and those which live habitually in contact with man. The field mouse, for example, appears to be endowed with slight susceptibility to infection.

RAILWAY SANITATION.

A committee of the French Society of Public Medicine and Professional Hygiene[20] has reported the following recommendations for the prevention of the spread of disease by means of railway coaches: The posting of notices in the cars and waiting-rooms prohibiting expectoration upon the floors of cars and stations, the placing of cuspidors in the waiting-rooms and corridors. These should not be filled with sand, but with an appropriate liquid. Wiping of the floors of cars and stations with moist cloths should be substituted for dry sweeping. Carpets or mats in cars should be made of material which can be readily cleaned. Persons suffering with infectious diseases should not be permitted to ride in the ordinary compartments but should be placed in a special compartment, in which no one else should be allowed to travel except the necessary attendants. At its destination this compartment should immediately be subjected to disinfection before being used again. Compartments designed for conveying the sick should be so constructed as to admit of disinfection readily.

Formaldehyde as a Disinfectant for Railway Cars.[21]

Dr. John E. Owens, chief surgeon of the Illinois Central R. R. Co., reports a series of successful experiments with formaldehyde by means of sheets (suspended in rooms) upon which solution of formaldehyde was thrown from a bottle, the room being of 500 cubic feet capacity and the solutions of formaldehyde (40 per cent.) being successively eight ounces, four

[17] Revue d'Hygiène, August, 1899.
[18] Centralbl. f. Bakt. xvii, p. 742, xx, pp. 85 and 176.
[19] Loc. cit. xxi, p. 497.
[20] Revue d'Hygiène, May, 1899.
[21] Journal American Medical Association, March 3, 1900, p. 548.

ounces, and two ounces; the time of exposure was five and one-half hours. The tests employed were the bacilli of anthrax, typhoid fever, diphtheria and yellow fever.

He then issued the following instructions governing the use of the formaldehyde apparatus for direct application of the solution in the disinfecting of passenger and freight cars:

(1) Suspend the two sheets, found in the outfit, by their edges from the roof of the car, or the bell-cord, by means of the clothes-pins. The sheets should hang their full length and be placed so as to equally divide the space in the length of the car.

(2) Close the doors and windows.

(3) Saturate both sheets with spray from the bottle, standing with the nozzle about eight feet from the sheet and throwing the spray against it, with the left hand directing the nozzle, supporting the tube where it passes from the bottle, and working the bulb vigorously and rapidly with the other hand. Begin at the top of the sheet, and use half of the required quantity of fluid on each sheet.

(4) For disinfecting passenger and baggage cars, fill the spray bottle with the formaldehyde solution furnished. For disinfecting freight cars, use the bottle half full.

(5) As formaldehyde is quite irritating to the hands and eyes, those using the solution are instructed to exhaust the spray quickly, leaving and closing the car as soon as possible. Caution should be exercised not to get the liquid on the hands or in the eyes, and not to inhale the vapor any more than is absolutely necessary.

(6) Leave the cars locked tightly for at least five hours after spraying and, if possible, allow eight hours to elapse before opening.

(7) On opening, take down the sheets and clean the car in the usual way. If any spots are left on furniture or polished woodwork by the formaldehyde, wipe them off with a wet towel and use furniture polish. If the sheets are still moist, they should be dried in the open air, but not washed until sufficiently soiled.

(8) For disinfecting spaces other than cars, such as baggage rooms, etc., the same method may be used, employing one bottle of the formaldehyde for every 4,000 cubic feet of room space, and one sheet for each 2,000 cubic feet.

INDUSTRIAL HYGIENE.

Miscellaneous Dangerous Trades.

The committee appointed to inquire into and report upon this subject has issued a fourth interim report [22] and a final report.[23] Thorpe and Oliver [24] have also reported upon similar subjects. The fourth report treats of the occupation of grinding and the danger from bursting stones; also the dangers of file-cutting, the chief danger in this occupation being from lead poisoning. Dr. Littlejohn, of Sheffield, testified that 91 persons had died in that city from lead poisoning, 56 of whom were file-cutters.

Porter, of the Royal Infirmary, referring to the insidious nature of the diseases, says that specific symptoms of poisoning do not occur usually for thirteen or fourteen years, and that was the average time between the date of the first exposure to the poison and the first specific symptoms, causing them to seek medical advice.

In the final report of the committee, ten different occupations are specified, the most important being those in which danger from lead poisoning exists. These are the chrome works, the use of lead in print and dye works, and the licking of labels in thread mills.

The following sanitary duties are enjoined upon the employers in chrome works: To provide washing conveniences, including hot and cold water, soap, nail brushes and towels; also respirators and overalls for persons employed in dry processes; fans and suitable means of ventilation wherever dust is generated; a sufficient supply of Epsom salts for making the following drink: magnesium sulphate, two ounces; water, one gallon; essence of lemon, sufficient to flavor. No food to be eaten in any part of the works. Working people are also requested to keep a bit of alum in the mouth during working hours.

The report of Thorpe and Oliver on poisoning in pottery manufacture presents the following conclusions: (1) By far the greater part of earthenware can be glazed without the use of lead; (2) some branches of the pottery industry would find it difficult to dispense with lead. Here the use of an insoluble silicate is recommended; (3) the use of raw lead for glazing or coloring should be absolutely prohibited; (4) since it is difficult to provide an innocuous lead glaze, young persons and women should be excluded from employment, and others should be subjected to systematic medical inspection.

(To be continued.)

[22] Fourth Interim Report on Certain Dangerous Trades, London, 1899.
[23] Final Report on Certain Dangerous Trades, London, 1899.
[24] Report on the Employment of Lead Compounds in the Manufacture of Pottery, London, 1899.

Reports of Societies.

SUFFOLK DISTRICT MEDICAL SOCIETY. SECTION FOR OBSTETRICS AND DISEASES OF WOMEN.

C. H. HARE, M.D., SECRETARY.

Regular meeting, Wednesday, December 27, 1899, Dr. R. A. Kingman in the chair.

Dr. A. C. Vietor read a paper entitled

A PECULIAR CASE OF ADENOCARCINOMA OF THE UTERUS.[1]

Dr. F. W. Johnson reported a

CASE OF EXTRA-UTERINE PREGNANCY, WITH OPERATION.[2]

Dr. Boland: I do not think I can add anything. The thing that suggested the possible nature of it was the history of a sudden attack of pain. She had been unwell seven or eight weeks before, and at the time when she should have been unwell again there was some dark flow, not similar to anything she had had before. Taking that into account, and the fact that she was several weeks over her time, and the sudden severe onset of the pain, the condition of shock and collapse suggested the diagnosis to me, especially in connection with the mass felt *per vaginam*. The sudden severe onset of pain without any explanation for

[1] See page 353 of the Journal.
[2] See page 355 of the Journal.

it and the absence of fever I think are very suggestive of trouble of that sort. This makes nine cases I have seen. In one of these I did not make the diagnosis. I think in the majority of cases the sudden severe onset of pain in the absence of trauma or colic is a thing that has helped me out more than anything else. I have seen *nine* cases in the last eight years all told. All except one recovered after laparotomy. This one was seen in consultation, and she refused operation until too late.

DR. KINGMAN: It seems to me that statement is very suggestive in the light of the fact that many men say they never see cases. Cases must occur in almost every practice, and the fact that one general practitioner, by careful observation, has found nine cases in eight years should stir us to be on the watch for the same condition.

DR. W. L. BURRAGE read a paper entitled

THE CONSERVATIVE OPERATIVE TREATMENT OF FIBROIDS.[3]

DR. KINGMAN: In regard to these other cases of morcellation that Dr. Burrage has referred to, I have with me the merest outline of two or three of them. Dr. Burrage very kindly assisted me in most of them, I think two before he invented this forceps. Indeed I believe it was largely the outcome of the second case I shall speak of that led to the preparation of this forceps, for there was not to our knowledge any instrument made or known to medical science that would touch those tumors.

The first was a physician's sister whom I saw about three years ago. She had been more or less of an invalid several years, suffering from excessive menstruation and great pain both at and between the menstrual periods. Her brother had urged her several times to see me, but without success, until she had a more violent attack than ever, when she consented to my being called. She had been flowing for about ten days, as I remember it. I examined her and found a hard mass, a uniform enlargement of the uterus, which extended as high as the umbilicus. Preparations were quietly made to admit her to the hospital and have hysterectomy performed. During the week while we were making the arrangements the whole complexion of the case changed. The pain had subsided and a profuse glairy discharge from the vagina set in which called for another examination, and I found the vagina filled with a mass of slimy, stringy, honey-combed tissue from which came this yellowish discharge. The os was large, and this mass extended up through it into the uterus. Again the word tumor was not mentioned, but she was told a mass was coming away from the inside of the womb which we must remove immediately. She entered the hospital and we attempted the operation. The mass was tough beyond belief and apparently had no capsule. A curette would not touch it, the fingers could not hold it, no forceps would hold it; so stringy was it that bullet or toothed forceps simply tore through it. The only thing that would touch it was knife or scissors. Guarding scissors with the fingers we cut away piece after piece. After finishing the operation the uterus was packed with iodoform gauze for twenty-four hours and daily uterine irrigation with permanganate was practised by myself. She stayed in the hospital six weeks. After the first days she had no symptoms, and from that time has been in absolutely perfect health without a symptom referable to her pelvic organs.

One year after, I cared for a Mrs. M. R., thirty-seven, married about six months, had had one miscarriage in Geneva, and was attended by a physician who told her everything did not come away; seemed to be something left in the womb in the way of a growth. Temperature and flowing and rapid pulse from that time until I saw her two months later. Pulse never below 100 after I saw her, I think temperature never below 100°. I found a mass reaching to the umbilicus. about the size of the previous one; os very slightly opened; finger could be introduced through it, and felt a mass extremely like a placenta. With the history of miscarriage, not knowing whether it was complete or not, and with this soft, somewhat offensive mass at the os, we determined to operate and endeavor to remove whatever was inside of the uterus. Dr. Burrage assisted me. The patient had large bones, tight, narrow pubic arch, very firm, resistant perineum, cervix directed into the hollow of the sacrum, the mass from the anterior wall of the uterus so that we had to turn about three sharp corners to get at it, the same sort of tumor as the previous one. No forceps would take hold of it, curette would not touch it. I don't think I have ever attempted an operation more difficult than that. We worked over it for two hours until the patient was in a state of shock, and both our thumbs were blistered from the use of forceps and scissors in trying to remove that mass, and yet we never thought of the desirability of hysterectomy in such a case. In view of its septic condition, I think hysterectomy would have been fatal. We removed almost every bit of the mass, but she had decided sepsis within a week, the temperature shooting up to 104° or 105° F. Then the uterus was explored by the finger and a mass felt, detached and removed. The temperature dropped to normal at once and she remained perfectly well. The subsequent history was not so favorable. A year ago she became pregnant, went to seven months comfortably; then developed eclampsia and died. That of course had nothing to do with the tumor and the uterus was apparently in a normal condition at that time.

The experience at that time stirred Dr. Burrage and myself to devise something to remove such tumors. It bore fruit in the case of Dr. Burrage, who within a week produced his morcellation forceps.

I will now speak of a case in which I used this forceps, she being also the sister of a physician, with sloughing fibroid not so large as those I have described. The fragments I believe weighed one pound when it was removed. Os easily dilated, and this mass about the size of my two fists was found growing from the posterior uterine wall. Then the value of this forceps was shown particularly, for after portions were loosened from their attachment the forceps could be shut into the mass, taking hold with bull-dog grip, and the mass could be twisted off and pulled out. I think about one-half of that tumor came away in one piece. We knew at the time there was a subserous tumor left in the fundus, but she is practically well and is near the menopause. The symptoms of hemorrhage which existed before, and of course the sepsis which existed at the time I saw her, were relieved by the operation, and she has seen no necessity to apply for further operation for complete removal of all the tumors.

[3] See page 349 of the Journal.

Dr. Grant: This specimen is to show the shrinkage which has taken place in a fibroid three years after the removal of the ovaries. It is from a woman forty years years old, from whom Dr. Charles G. Cumston three years ago removed both ovaries, for pain in the back and constipation caused by a uterine fibroid the size of an adult head, the condition of the patient not admitting of any more radical procedure. As the symptoms did not disappear, a vaginal hysterectomy was performed two months ago and this specimen removed, the fibroid, as you will see, being about four and one-half centimetres in diameter.

Dr. Breck: There is one form of conservatism that has not been referred to, and that is, doing nothing at all. I should like very much if the leaders of the discussion would favor us with their experience on that point, the observation of patients who have had nothing done, either advised not to or refused to have anything done. I have seen quite a number in which no harmful results seemed to follow very extensive fibroid tumors, and I have had one case in which, in spite of large multiple fibroids, a simple curetting has resulted in absence of all further symptoms, checking very severe flowing.

Another form of conservative operation which I think has not been alluded to is the case of submucous or intramural tumor, not projecting into the interior of the uterus. I have had a limited experience with that class of tumors, in which the cervix was incised and the tumor removed by enucleation and morcellation.

With regard to the use of tents, I want to say a word. It seems to me the use of laminaria tents is unscientific, and for this reason: although your tents may be perfectly sterile, the uterine cavity into which they are introduced is not sterile, and I can also say I have seen one such case in which serious sepsis followed in a few days, leading to pus high up, and a very serious operation which resulted in the death of the patient.

It has been stated that in the vaginal operation for fibroids the uterine appendages cannot be seen and treated, or at least it is difficult. I think, in many cases, they can be seen and treated, and not only the fibroid can be removed, but the ovaries and tubes can be excised, or partially excised, without any special difficulty.

Dr. Johnson: In reference to the let-alone treatment, I would like to say that I think that in case of fibroid tumors, if they are growing or cause pain from pressure, produce any reflex nervous symptoms or in any way interfere with the patient's health or threaten her life, they should be removed. I think pus tubes are too commonly associated with fibroid tumors to be a mere coincidence. I think the attacks of peritonitis that we see with fibroid tumors with adhesions between the tumor and the omentum, and the tumor and the intestines, are too common to be simply coincidences. Fatty degeneration of the liver is very common with fibroids, heart lesion of some sort or other is very common with fibroids. In 33 cases examined by Ingraham, 14 had some cardiac lesion. Malignant disease is not uncommon with fibroid tumors; irritation caused by them starts up malignant growth in a neighboring part. In Kelley's review of 100 cases of carcinoma, in eight of them myomas were found, six adenocarcinomas of the body, one adenocarcinoma of the cervix, and but one an epithelioma of the cervix, quite a large number, when we consider the relative infrequency of carcinoma of the body.

It seems to me electricity ought to be considered as one of the conservative methods. In certain cases it will relieve pain and hemorrhage. It almost never retards or stops the growth of the fibroid. It relives the hemorrhage by cauterization of the endometrium, converting it into scar tissue. The removal of the tubes and ovaries once in a while does stop the growth of a fibroid and causes it to shrivel up, but that cannot be depended upon, and even cutting off the blood supply or supposed blood supply will not always prevent its growth. Whatever operation is done, I believe that the uterus should be saved if it is a possible thing, and enucleation, of course, is the operation that will do that oftener than any other. In cases where hysterectomy seems necessary, I think both ovaries, or one or part of one, should be saved to prevent the menopause, which is always stormy if brought about by operation.

I went over my hospital records for six years, and found I had done 32 myomectomies without a death, removing in all fifty-nine tumors. In one case I removed seven from the same patient on account of sterility. She soon after became pregnant and aborted at the third month, and the uterus was curetted. Soon after, she became pregnant and went to term.

I was surprised to find that the death-rate from sepsis and secondary hemorrhage after myomectomy was large, even in the hands of such men as Martin. Secondary hemorrhage and sepsis mean a careless and dirty operator. I use catgut for ligature material.

Dr. Boland: This is a subject for the gynecologist, no doubt, but from the standpoint of the family physician, anything that is conservative is easier to carry out, being less terrifying to the patient. I recall one case of fibroid which a specialist saw with me and advised against doing anything. The woman was especially valuable to her family and to the community. She died of hemorrhage. I had an autopsy and found the womb four inches in length and three in breadth, containing a small, submucous tumor with a pedicle. One sweep of the curette would have removed it. If dilatation of the cervix had been a routine procedure, that tumor could not have escaped detection and removal. That case made a strong impression upon me.

Dr. Twombly: I have very little to add to the general trend of the papers. They have all been in the same line in which we are working in these days, that is, conservative treatment. If we can save the uterus we want to do so. Dr. Boland has spoken from the general practitioner's standpoint. The papers have spoken from the specialist's standpoint. It cannot be urged too strongly that a digital examination should be made with a dilatation of the cervix, and the finger swept up to the fundus, to determine just what you have in cases of suspected submucous tumor. It will give you the information you need, and if early performed, may save the patient a serious operation. In my case, which has been referred to and which I presented in 1897, a vaginal myomectomy was advocated instead of complete hysterectomy because of such diagnosis, and in that case it was found on splitting the cervix (to make room to get into the uterus) that the tumor could be very easily enucleated after the capsule had been incised. Sewing up the cervix afterward, we had no trouble, no hemorrhage, and the patient made a perfect recovery. As regards the treatment of subperi-

toneal tumors or ones with pedicles, if they are small we can remove them by the vaginal route, and it is wise to remove them if you find they are pedunculated. These do grow longer and longer, become twisted, and complications ensue that may be difficult to overcome. The long pedunculated fibroid is certainly a source of danger, and, as it has been already stated, it seems wise to remove them early. If near the menopause, we can leave the uterus or not, as the case may be, but in a young woman we do not wish to destroy her prospects of womanhood if it can be avoided. We must be conservative with regard to this subject of fibroids and not, as perhaps even five years ago, remove the whole uterus because there are more than one or two fibroids about or in its substance.

Dr. Burrage: Dr. Breck spoke of leaving the fibroids alone. I understood the discussion was to be on the conservative operative treatment, and leaving them alone is not operative, so I do not think that subject ought to be included in this discussion.

As to the use of tents, I advocated their use, although it may seem to some as if we were going backward. I have seen tents mismanaged a good deal in the pre-aseptic days when they were used extensively. I remember one case where an operator thought he would get in as many as he could. He put in five, and they, so to speak, tore the uterus all to pieces and there was a disastrous result. If one uses them carefully and puts in a small tent, and then, after giving it a chance to dilate, inspects and cleanses the parts, removes the tent and irrigates and puts in a larger one, I don't think there is much danger, if any, and I think it very essential to have a digital exploration of the uterine cavity where possible. I have seen several cases where hysterectomy was done where a small pedunculated submucous fibroid at the fundus was the only abnormality present. We ought to avail ourselves of every opportunity for diagnosis. I have often found it very difficult to dilate the uterine cavity with the ordinary steel dilator. Dr. Reynolds has a dilator which he uses in dilating the uterus at term — a large steel dilator, which seems to me might be adapted to this work. In the case of a very rigid uterus with thick walls, it is difficult to dilate it with rapid dilatation to a sufficient degree. On that account I advocate tents, but they must be handled carefully and under strict antiseptic precautions.

Dr. Kingman: I believe the danger in the use of tents, if there is any aside from that due to improper use of them, is largely overcome in cases such as were described, because the use of them will immediately precede operative interference of some sort. We are going to explore the uterus, the uterus will be then irrigated, and probably curetted. We ought at that time to be able to remove any infection that may have been made by the tents, or if the sepsis was there previously the operative interference ought to be such as to obviate any serious results.

I want to lay a little more emphasis on the point Dr. Burrage made in regard to using steel dilators in all cases to open the cervix sufficiently for digital examination. In the soft cervix they can be used to give plenty of room for a fair examination, but in the small conical cervix, in the hard cervix of anteflexion with cicatricial plug about the internal os, I believe it to be absolutely impossible without splitting the cervix to gain room in any reasonable time with the use of those dilators for the introduction of the finger.

I want also to say just a word in regard to the point Dr. Breck made, speaking of the possibility of splitting the cervix and removing intramural tumors. I think there must have been a misunderstanding of the cases I reported, thinking the tumors were pedunculated. They were not; they were intramural and some very closely associated with the peritoneum; they protruded into the cavity of the uterus, but were also large enough to extend through the uterine wall, and in one case, at least, the peritoneum was felt as a very thin partition between the finger and the peritoneal cavity. Just there comes in the beauty of this forceps, for with them the splitting of the cervix is not necessary. In the case reported by Dr. Twombly the cervix was split. That tumor could have been removed inside of three or four minutes with perfect ease and without splitting the cervix, had this forceps been available.

I have observed a number of cases in which I have not advised operation. One I attended in past years in confinement. She has symptoms from it, flows excessively, and still her health is not seriously impaired by it. A very important danger connected with letting tumors alone is associated with childbearing, and I think no woman whom we know to have a fibroid in her uterus should be allowed to marry with our consent. The danger should be pointed out and operation urged. If she is not to marry it is a matter of choice whether to have it removed or not.

Dr. R. A. Kingman read a paper entitled

TWO CASES ILLUSTRATING CONSERVATIVE OPERATIONS FOR UTERINE FIBROIDS.[4]

Recent Literature.

A Text-Book of the Diseases of the Nose and Throat. By D. Braden Kyle, M.D., Clinical Professor of Laryngology and Rhinology in Jefferson Medical College, etc. Philadelphia: W. B. Saunders. 1899.

This is a new text-book on diseases of the nose and throat, covering about 650 pages and containing 175 illustrations. To quote from the preface: "It has been the aim of the author to classify the diseases according to the pathological alterations caused by them. Many things in the book may seem superfluous to the specialist, but the work has been prepared for the student and general practitioner as well. Considerable space has been devoted to certain diseases that are somewhat rare."

It is always interesting to the specialist to have his subject presented to him in a new way, particularly when the argument is founded on pathological rather than on clinical reasoning. Our present knowledge of pathological processes is nowhere near sufficient to explain even some of the most definite lesions; especially is it not an easy task to explain the pathological or neurotic causes of the many disturbances of function or sensation which are constantly met in the upper respiratory tract, and the author is to be congratulated on bringing well-equipped theoretical knowledge to aid his clinical experience. It is very satisfactory to find simple inflammation, syphilis, lupus, tubercle and

[4] See page 352 of the Journal.

the less common specific diseases of the mucous membrane and other tissues approached in so rational and interesting a manner. Many of the author's deductions will necessarily be out of harmony with many of his readers, because much is still in dispute. It is, perhaps, a little surprising to find, for instance, that he considers the etiology of nasal polypi to be the same as for any other benign connective-tissue tumor, and that inflammation and catarrhal condition in the majority of cases is secondary to the tumor. Some of our most familiar diseases, such as atrophic rhinitis, are subdivided and classified to an extent which would be likely to confuse the clinical if not the pathological student. The descriptions of some others, such as peritonsillar abscess and fibrous tumors of the basillar process, are not clear. It is to be doubted whether common experience would endorse the author's experience that scarification of the tissue or deep puncture in peritonsillar abscess will relieve the tension or sometimes prevent suppuration; or that in early childhood one of the best points of diagnosis between adenoids and other obstructive lesions is irregularity of the teeth; or that the removal of a small portion of the faucial tonsil by the tonsillotome will by the contraction of the scar tissue, which necessarily follows, materially reduce its size, or that in the soft variety a practical form of routine treatment consists in thoroughly cleansing and drying the parts and carefully mopping the tonsillar tissue, as well as the tonsillar crypts, with dilute hydrochloric acid every other day for from ten days to six weeks. Among matters of smaller importance, we might have hoped in so recent a work for a more detailed description of the anatomy of the tonsillar region, the spontaneous escape of cerebrospinal fluid as one cause of hydrorrhea and the separation of cystic middle turbinates from simple inflammatory processes.

In spite of these the general practitioner will find the book useful and thorough for occasional reference. For the student, the arrangement is not always good, nor the relative importance of different diseases well brought out; he will find the chapter containing a rather meagre description of papilloma of the larynx concealed among eight with the general heading of Diseases of the Anterior Nasal Cavities. Also the relative importance of causes and symptoms is not always clear, for instance, under epistaxis, the fact that in most cases the bleeding comes from the anterior part of the septum and can be very easily controlled is hidden among much rarer possibilities. The book will be found of value to all of the classes of readers by supplementing other authorities in etiology, diagnosis and treatment.

Treatise on Orthopedic Surgery. By Edward H. Bradford, M.D., Surgeon to the Children's Hospital and to the Samaritan Hospital; Assistant Professor of Orthopedic Surgery, Harvard Medical School, and Robert W. Lovett, M. D., Assistant Surgeon to the Children's Hospital; Surgeon to the Infants' Hospital. Illustrated with 621 engravings. Second revised edition. New York: William Wood & Co. 1899.

A comparison of the second edition of this excellent treatise with the first edition, published nine years ago, confirms the statement of the authors that "the progress of orthopedic surgery during the last nine years has been so rapid that a revised edition of this work has necessitated very largely the rewriting of the entire book." There will be found scarcely a chapter in the work which has not been enlarged with a wealth of text and illustration additional to that published in the earlier edition, and embodying the truly remarkable advances in theory and practice in orthopedic surgery which have resulted from the industry and enthusiasm of the laborers in that field since the first edition was printed.

The pathology of Pott's disease is illustrated by good reproductions of Nichols's excellent photographs of sections of the spine. An excellent half-tone illustration of distortion of the aorta (after Dwight) is amusingly enough printed and lettered upside down, with the carotids pointing downward and the iliacs upward. The most notable advance in the treatment, "forcible reduction" of the deformity, which has come up since the previous edition, is amply discussed and well illustrated. The various methods of applying plaster-of-Paris jackets in the recumbent position, which has come into vogue since the previous edition, are also well illustrated.

The discussion of the treatment of lateral curvature of the spine is enriched by numerous illustrations of the more recent methods of treatment and forms of apparatus.

The pathology of chronic joint disease is also illustrated by Nichols's instructive sections of diseased joints, and many new photographs illustrate the various clinical manifestations of the disease and the newer modifications of the apparatus for its treatment.

An enumeration of all the chapters to which additions have been made would necessitate mentioning every chapter in the book. Among the more notable ones are the chapter on Congenital Dislocations of the Hip, a most admirable and thorough discussion of the pathology, treatment and results, illustrated by diagrams, photographs and skiagrams, and the chapter on Infantile Spinal Paraiysis, to which has been added a discussion of tendon transplantation, with illustrations taken chiefly from Goldthwait. The chapter on Flat-Foot and Other Affections of the Feet has also been rewritten and illustrated by new photographs, drawings and skiagrams. The book is now perhaps the most thorough treatise which has been published on orthopedic surgery, and certainly is the only one in which so large a number of subjects have been brought thoroughly up to date.

The Fifth Annual Report of the Board of Health of the Province of Quebec.

This report comprises the work of the Provincial Board of Health of Quebec for the year ended June 30, 1899. The number of reported cases of contagious disease in the province during the year was as follows, in an estimated population of 1,690,064: small-pox, 14; diphtheria, 2,617; scarlet fever, 1,084; typhoid fever, 1,030; measles, 1,038.

One of the principal topics considered in the report is that of school hygiene, in which the compiler has presented in a condensed form the principles laid down in the works of Arnold Bergenn, Trelate, Lincoln and others. This article is fully illustrated with cuts.

The birth-rate of the province for the year 1898 was 35.7 and the death-rate 17.9 per 1,000.

The following comment is worthy of note: "If we compare the natural increase with those of certain

countries in Europe and in the United States, we have the satisfaction to find that this natural increase in our province is higher than in any other country in the world."

In several of the French Canadian counties, the statistics of which are given, the birth-rates were respectively 50.5, 51, 57.1 and 59.3 per 1,000, and were twice as great as the death-rate.

Practice of Medicine. A Manual for Students and Practitioners. Lea's Series of Pocket Text-Books. By GEORGE E. MALSBARY, M.D., Assistant to the Chair of Theory and Practice of Medicine, Medical College of Ohio, Cincinnati. Edited by BERN B. GALLAUDET, M.D. Illustrated with 45 engravings. Philadelphia and New York: Lea Brothers & Co.

This is the third volume of a series of Pocket Text-Books, of which sixteen are promised. They are designed, we are informed, "to give a simultaneous and authoritative voice along the entire front of present-day medical science." We are also told that "the student possessing the knowledge to be obtained in this library will be unusually well equipped for examinations and practice." It is not impossible that he may be, but we venture to think it will not be due to such ownership. One thing is true: such books can be turned out more rapidly than encyclopedias, but a quiz-compend can be turned out quicker still. The present volume is a duodecimo of 404 pages, with index, and is neither better nor worse than a number of other manuals of the same general character devoted to the practice of medicine.

A Compend of the Practice of Medicine. By DANIEL E. HUGHES, M.D., Chief Resident Physician, Philadelphia Hospital; Physician-in-Chief, Insane Department, Philadelphia Hospital, etc. Sixth physicians' edition. Thoroughly revised and enlarged. Including a section on Mental Diseases and a very complete section on Skin Diseases. Philadelphia: P. Blakiston's Son & Co. 1899.

This volume, as issued in this its sixth edition, comprises 625 pages of rather finely printed matter. It has evidently retained its place of popularity and will certainly be found a useful compend, beyond which it makes no claim. A commendable feature of the book is a section on mental disease, which is at least sufficiently comprehensive to give the student some knowledge of this extremely important branch of medical practice. A section on the skin is also acceptable. The book is well bound in flexible covers, and has a copious index.

Home Nursing. Modern Scientific Methods for the Care of the Sick. By EVELEEN HARRISON. Pp. 235. New York: The Macmillan Co. London. Macmillan & Co., Ltd. 1900.

This small book is intended for instruction in simple methods of caring for the sick, particularly in those cases in which a trained nurse is not required. It is full of excellent suggestions and will no doubt fill a modest place. The arrangement of the subject matter in headings, easily accessible even to one inexperienced in medical or nursing matters, is a commendable feature of the book. It makes no pretensions, and for this reason will find a warmer reception. In an appendix is given a list of recipes for invalid cooking. An index is also provided.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, APRIL 5, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.

THE LONG ISLAND HOSPITAL, BOSTON HARBOR; REPORT OF THE TRUSTEES.

THOSE who have followed with any degree of attention the development of the Long Island Hospital, in connection with the city almshouse, will before this have come to the conclusion that the institution is now, after many vicissitudes, fairly started on a career of great usefulness. Boston, as we have before had occasion to say, has been slow in recognizing the significance of this institution in connection with its medical charities. There is evidence, however, to show that this time is past, and that the immediate future will see a rapid increase in public interest. It is apparently hard for physicians, as well as laymen, to recognize the fact that a hospital in the modern sense of the word exists on Long Island, provided with a training school for nurses and the necessary accessories for good medical and surgical work. This is, however, the case, as a visit to the institution will, we think, go far to demonstrate.

Like all institutions, however, and particularly those in which a general public interest has not yet been actively aroused, the hospital has needs of a definite sort, which added appropriations can alone satisfy. A hospital is an expensive necessity; to do good work it must be supplied with modern appliances, and granted liberal allowance for proper food and the requirements of the sick. The Long Island institution finds itself in this position: it has, in many respects, attained the dignity of a hospital for chronic disease, but it is still laboring under the misapprehension on the part of the public, as represented by the City Government, that patients suffering from chronic ailments do not require the refinements of care which belong to persons more acutely ill. There is much to be said on the other side of this question. There is at the institution the greatest need of a more liberal provision for the needs of the sick. When a person is ill, the question of social status should absolutely not enter into consideration. We need in Boston a good hospital for chronic diseases, and the opportunity for such a hospital seems to exist at Long Island. To

this end the gradual separation of the Almshouse Department from the Hospital Department must constantly be borne in mind, a fact which we are glad to note the trustees are eager to acknowledge. On this subject, they say, in their report: "An increased expenditure for maintaining the almshouse and hospital at Long Island is very much needed, so we are asking each year for a larger appropriation. Connected with this institution is a hospital that was intended and is used for the chronic and incurable cases of the city of Boston. This hospital had an average daily population during the year of 229. It is the only one of its kind maintained by the city of Boston, and its standard should be raised to compare favorably with other hospitals of the same character. While we do not expect that it would ever cost as much to maintain this hospital as the City Hospital, we do believe that it should approach it in standard of hospital work. At present it is expected that the cost will be kept down to an almshouse basis. This idea should be abandoned, and the hospital gradually brought up to a proper hospital standard; a separate appropriation should be granted for it, and kept distinct from the almshouse. Until this is done the hospital will suffer from its association with the almshouse, and the almshouse will on the surface appear to be too expensively conducted." We have little doubt that these palpable facts will come to be generally recognized and acted upon, to the great credit of the city.

The report of the visiting staff of the hospital urges various improvements: a nurses' home; more platforms for phthisical patients; an added ward to relieve the extreme crowding of the male wing. Regarding the Training School for Nurses, about which there has apparently been some confusion in the minds of physicians, the staff's report reads:

"The Training School for Nurses has been completely organized during the past year, and may now be regarded as definitely established. We are of the opinion that the Long Island Hospital offers an admirable opportunity for the training of nurses in many varieties of disease, and are equally sure that the proper conduct of the hospital demands the continuance and improvement of the school. We look forward with confidence to the time when this Training School will be generally recognized, and the graduate nurses be given opportunity for such post-graduate study as they may care to undertake. In consideration of the fact that the Training School is still young, we feel that satisfactory progress in its development has been made, and that future progress is assured."

With this expression of opinion we should entirely agree. Such an institution affords an exceptional opportunity for general training in the work a nurse is required to do, and we see no reason why this school should not take a high rank, as the hospital makes further claims to general recognition.

Finally, it is to be hoped that legislative action may ultimately be taken, looking to the possibility of permitting suitable patients to enter this hospital without the declaration of pauperism. Much injustice would thereby be averted, and a significant step in progress made toward the establishment of a hospital for chronic disease, in the best sense.

ON THE EFFECT OF THE EXCLUSION OF CERTAIN DISEASES AS CAUSES OF MORTALITY.[1]

We are accustomed to the use of direct methods of reasoning in the consideration of statistics of mortality, but occasionally the introduction of hypothetical processes also facilitates the intelligent consideration of a given subject. Dr. Hayward has employed this hypothetical method in treating the life table of England in order to determine the effects of particular diseases upon human life. He says the most exact and vivid way of bringing into view the effects produced by any one disease is to construct a life table based upon the supposition that this particular disease has been altogether eliminated.

"What would really happen," he says, "if some disease, say phthisis, were entirely abolished, it is difficult to say, for in nature the destruction of one kind of pest, whether animal or vegetable, sometimes leaves the ground free for the more active development of other species. However, as a working hypothesis, we must consider that, if one cause of mortality be done away with, the remaining causes would continue to act with proportionate intensity on those saved from the action of the cause eliminated."

Having worked out these life tables on this assumption of the elimination of certain diseases, the author goes on to measure the effects of such diseases by answering these questions: (1) How much greater would be the chance of living from one year to the next at each age, supposing a given disease to be eliminated? (2) How many more survivors would remain at each age out of a given number supposed to be born? (3) How much longer would be the expectation of life at each age?

The diseases considered are phthisis, the whole group of tubercular diseases, cancer, typhoid fever, scarlet fever, diphtheria, diarrhea, measles and whooping-cough. We have selected the following figures from the columns entitled "Expectation of Life" to show the difference which would be produced by excluding or eliminating entirely each of certain diseases.

The accompanying table may be read as follows, for example: If cancer were eliminated entirely from the causes of death in England, the expectation of life of a boy at birth would be lengthened .39 of a year, or 142 days, and that of a girl at birth .83 of a year, or 303 days. The expectation of a young man at twenty-five would be increased .54 year and that of a young woman of the same age, 1.14 years.

[1] The Life Table of England and Wales (1881-90) as Modified by the Supposed Exclusion of Certain Diseases as Causes of Mortality, by T. E. Hayward, M.D., Medical Officer of Health of Haydock. Public Health, December, 1899, p. 214.

Difference Produced upon the Expectation of Life at Birth and at Twenty-five Years of Age by Excluding Each of the Following Diseases:

	Phthisis.	All Tubercular Diseases.	Cancer.	Typhoid Fever.	Scarlet Fever.	Diphtheria.
Males, at birth.	+2.58	+3.86	+0.39	+0.30	+0.53	+0.24
Females, at birth.	+2.57	+3.72	+0.83	+0.29	+0.57	+0.28
Males, at twenty-five years.	+2.58	+2.73	+0.54	+0.17	0.00	0.00
Females, at twenty-five years.	+2.19	+2.29	+1.14	+0.15	0.01	0.00

A similar result is shown in the table of survivors in Massachusetts, comparing the life tables of 1855 and 1895, forty years apart, in consequence of the lessening in the mortality from infectious diseases in the early years of life. In this table it appears that out of 10,000 infants at birth, 806 more were living at the age of twenty-five according to the table of 1895 than were alive at the same age according to the table of 1855.[2]

THE "HUMANE" BULLET!

To one who looks at war from the point of view of a layman, military ethics presents many extraordinary analomies, of which the most extraordinary is the significance attached to the word "humane" in connection with modern projectiles. It appears that it was at some time agreed among those interested in the matter that the stigma of "inhumane" should be placed on certain varieties of small-arm ammunition, and that other projectiles should be arbitrarily considered humane, quite apart from the effects of those projectiles on the human body. This attempt at civilizing warfare has been productive of very astonishing results in practice, results which we confess appear to us wholly inconsistent with this so-called civilizing tendency. For example, we hear no protest raised against the use of shrapnel or explosive shells when discharged by the artillery arm of the service. Lyddite shells are looked upon with high favor by military authorities, in spite of their alleged destructive nature and propensity to give rise to suffocating fumes. No charges of inhumanity are raised when men by the score are torn to pieces by these means. This is what Mr. Treves writes of the wounded after Spion Kop: "As I mentioned in my last letter, the wounded from the battle of Spion Kop on January 24th presented a very large proportion of shell and shrapnel injuries. In spite of every possible care, the shell wounds, almost without exception, have done badly. We had over 30 deaths within the week after the battle, and these were nearly all cases of shell injury. The wounds are of the worst type, contused and lacerated, and very often contain dirt, fragments of stone, and even grass."

This is recognized as legitimate warfare of the modern civilized kind, and although the "wounds were of the worst type" and "contained dirt. fragments of stone and even grass," no one has a word of protest to offer, because some convention has agreed that these means of attacking an enemy are legitimate. In view of these facts, we confess to a sensation of amusement when the whole civilized world stands aghast because explosive or expanding soft-nosed bullets are found in somebody's pocket, or in somebody's body, from which it is forthwith concluded that "the enemy has unquestionably resorted to barbarous methods of warfare," necessitating formal protests and much recrimination. No doubt this is a stage in progress, from which we may gradually emerge into a frame of mind which will regard the actual facts in the case, and estimate what is humane and what inhumane from the standpoint of common sense and not of arbitrary authority. In the meantime, however, we must keep abreast of the march of civilization, and frown upon the soft-nosed rifle bullet, while we congratulate ourselves upon the excellent effect of shrapnel and explosive shells in hastening the dawn of a new era of honorable warfare.

[2] Report of State Board of Health for 1898, p. 818.

MEDICAL NOTES.

Remarkable Recovery from Bullet Wounds. — Sir William Stokes, in his report to the *British Medical Journal*, March 17th, from Natal, mentions among other extraordinary recoveries from injuries the case of a gunshot wound in which the bullet struck and penetrated the forehead on the left side high up, and emerged at the vertex a little to the right of the occipital protuberance. The only result of this wound was total blindness of the left eye with optic atrophy. Otherwise, a good recovery was made. A Boer is described who had a bullet wound through the abdomen, shell wounds above and below the left knee, similar shell wounds above the left elbow, and fracture of the left radius and ulna. He recovered.

Death of Dr. St. George Mivart. — The death of Dr. St. George Mivart, at the age of seventy-three, is announced. He was at one time lecturer on zoölogy at St. Mary's Hospital Medical School, and professor of biology at the University of Louvain. His attainments as a man of science have been generally recognized, particularly in his work on and opposition to the Darwinian theory of the origin of species. After numerous conflicts of opinion with the authorities of the Romish Church, of which he was a member, he finally asserted his right to complete liberty of thought. Dr. Mivart was a member, and at times an officer, of many learned societies.

Examination of School Children's Eyes.— A department for examination of the eyes of Chicago public-school children has been added to the child-study system of the Board of Education. Hereafter parents of children with defective vision are to be warned of the possible danger to their children. A similar rule was made two years ago, but has not up to the present time been strictly enforced.

An Enterprising Woman Doctor.— It is reported that Hon. Ella Scarlett, M.D., daughter of Lady Abinger (formerly Miss Helen Magruder, daughter of the late Commodore George Allan Magruder of the United States Navy), is going to Korea from London as medical officer of the imperial household.

Plague.— But one case of plague had occurred at Honolulu, previous to March 28th, for a considerable time. Business is being carried on as usual. The deaths in Calcutta in a single day during the last week in March numbered 217, with 157 new cases reported.

Dr. Osler not a Candidate for the Chair of Medicine at Edinburgh. — It is announced through the *Philadelphia Medical Journal* that Dr. Wm. Osler is not a candidate for the chair of medicine at the University of Edinburgh.

A Second Malaria Expedition. — The Liverpool School of Tropical Medicine is about to send a second expedition to West Africa to study malaria.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, April 4, 1900, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 67, scarlatina 49, measles 81, typhoid fever 5.

Boston Health Statistics.— The death-rate for last week, although still large, is less than it was the previous week, probably due to the decrease in cases of influenza. The number of deaths reported to the Board of Health for the week was 316, as against 198 the corresponding week last year, showing an increase of 118 deaths.

Lowered Death-Rate for Cambridge.— Cambridge had a lower death-rate last week than for the week preceding. Thirty-five deaths were reported, as against 60 of the preceding week. The number of cases of contagious diseases reported during the week was 26, of which 13 were of scarlet fever, 6 of diphtheria, and 5 of measles.

NEW YORK.

A Commendable Legal Position. — Justice McAdam recently, upon an application to punish one Robert Irwin for contempt of court, denounced in vigorous language the practice of employing "runners" to procure witnesses to testify in accident and other cases. Mary Nestor, who was riding on a New York street car with her sister, was fatally injured while in the act of alighting. Irwin, who described himself as an "accident adjuster," was in the vicinity at the time and rushing up gave the girl a card containing the name of an attorney, with the request that the case should be placed in his hands. A suit was brought by the sister, as administratrix, to recover $25,000 damages, but the strong preponderance of evidence on the trial established that there had been no negligence on the part of the motorman, and the verdict was in favor of the company. The charge against Irwin was that he made and delivered to three witnesses a typewritten statement of what they were to swear to, which statements, it was claimed, were untrue, and were furnished to aid the plaintiff in obtaining a verdict by false testimony. Irwin testified that he devoted his time to discovering accidents and inducing the injured to go to a lawyer of his selection to bring suit for damages.

A New Medical and Surgical Clinic. — St. Bartholomew's Parish House is to have a new model building for its Medical and Surgical Clinic, which will be erected on a lot of 50x100 feet, adjoining the Parish House, on East 42d Street. This building, which is to cost $150,000, together with an endowment fund of $100,000, is said to be the gift of Mrs. Caroline Hoagland, widow of Joseph C. Hoagland. St. Bartholomew's Clinic, which has now been in existence for some years, is for the treatment principally of diseases of the eye, ear, nose and throat. One feature in which it differs from most other dispensaries is that its hours of consultation are in the evening, so that the poor may come for treatment after the day's work is over.

New Jersey State Sewerage Commission Bill. — On March 20th the lower house of the New Jersey Legislature passed what is known as the State Sewerage Commission Bill, which had already been passed by the Senate. This measure puts under the ban of the law all pollution of streams and waters of the State, except Newark Bay and the Kills, and gives to a commission of five members the authority to determine when the pollution must cease in any particular case.

Annual Appropriation Bill. — Among the items in the Annual Appropriation Bill, which was passed by the State Senate on March 27th, are the following: State Board of Health, $37,000; State Board of Charities, $81,140; Quarantine Commission, $7,500; State Lunacy Commission, $3,856,600; State Hospital for Insane Criminals at Matteawan, $70,800; other hospitals and asylums, $864,800; Cornell University interest, $94,428.

Resignation of Rev. Dr. Baker of St. Luke's Hospital.— At a meeting of the Board of Managers of St. Luke's Hospital, held March 27th, the Rev. Dr. George S. Baker, who had been superintendent of the institution for more than twenty-two years, was retired from that position and appointed pastor emeritus of the hospital on a pension of $2,000 a year, in recognition of his long and faithful services.

New Hospital for Harlem. — A site for the much needed new hospital in Harlem, for the Department of Public Charities, has been selected, a plot of ground extending 200 feet on Lenox Avenue and 310 feet on 135th and 136th Streets. The cost of the

land is $300,000, and the Board of Estimate and Apportionment has promised $300,000 additional for the erection of the buildings.

A Centenarian.— Mrs. Mary Cleary Hyland died in Orange, N. J., March 29th, at the age of one hundred and three years, having been born in Kings County, Ireland, in 1897.

ARMY NOTES.

Mortality in the Philippines. — Much regret is felt in official circles at the sensational statement, started for political purposes, that the occupation of the Philippines was costing the lives of a thousand soldiers a month. This statement undoubtedly originated through the fact that a large number of contract surgeons have recently been sent to Manila to replace those whose contracts had expired and who desired to return home. It so happened that twenty-four contract surgeons sailed recently from San Francisco on a single transport — men who had been awaiting transportation for several weeks under orders issued in the general routine — and the opportunity to make a story for political capital was not lost. As a matter of fact, since the American occupation of the Philippines, June 1, 1898, to February 17, 1900, the date of the last official compilation, the actual mortality in the Philippines was 65 officers and 1,460 men, a total of 1,525, or 74 per month. This rate is by no means high considering the existing state of warfare, the presence of 65,000 troops in the islands and the arduous conditions of field service and new climatic influences to be encountered. Of the above number, 42 officers and 570 men died by violence, and 16 officers and 693 men by disease; among the deaths from the latter cause, to January 1, 1900, there were 20 from pneumonia, 21 from tuberculosis, 49 from malarial diseases, 149 from dysentery, 53 from bowel affections other than dysentery, 100 from small-pox, and 167 from typhoid fever.

The Hospital Ships "Missouri" and "Relief." — In view of criticisms which have been made with regard to the hospital ships *Missouri* and *Relief*, a board of officers has been appointed to investigate all the facts relating to the equipment and fitting up of these ships, including their condition at the time of purchase by the Government, and particularly to report upon the present condition of these ships, their seaworthiness, suitability for hospital purposes, and the sum necessary to place them in a condition to meet the requirements of the hospital service. The board is also to determine the reasons why the vessels are not now seaworthy or fit for the hospital service, if such be the case, and in the event of their usefulness having been impaired by the character of the work done upon them since their acquirement by the Government, to fix the responsibility for their unsatisfactory condition. The *Missouri* is now at San Francisco, and the *Relief* is stationed at Manila. It is probable that the latter ship will be ordered to San Francisco for inspection by the board. During the recent trip of the *Missouri* around the globe, serious friction occurred between Major Arthur, the medical officer in command, and the ship's officers. This matter has recently been officially investigated by General Shafter, resulting in the discharge from the Army Transport Service of the captain and first and third officers of the ship, and the indication of the position assumed by Major Arthur.

Invaliding Home of Sick Soldiers.— The plan has been adopted of invaliding home all sick soldiers whose condition is such that they can scarcely be expected to resume active service in the next few months, it having been found that cases of certain diseases do not do well in the Phlippines during the rainy season now close at hand. In compliance with orders from the Secretary of War, General Otis has instructed all commanding officers in the islands to send to Manila such sick as are able to travel, from which point they are to be forwarded to San Francisco on returning transports as rapidly as possible. Large quantities of stores have been distributed throughout the islands by the hospital ship *Relief*, in anticipation of greater sickness during the rainy season. She is to collect sick from outlying stations during her trip and will return to Manila about May 1st.

A Prize for an Ideal Army Ration. — The prize of $100 (or its equivalent in the shape of a gold medal), offered by Dr. Louis L Seaman, of New York, through the Military Service Institution, for the best essay on "The Ideal Ration for an Army in the Tropics," has been unanimously awarded to Capt. E. L. Munson, Assistant Surgeon United States Army. The board of award consisted of three army officers, Col. John F. Weston, Acting Commissary-General, Lieut.-Col. Charles Smart, Deputy Surgeon-General, and Lieut.-Col. Wm. H. Dougherty, Seventh United States Infantry.

Illness of Col. Calvin DeWitt.— Lieut-Col. Calvin DeWitt, Chief Surgeon of the Division of Cuba, has just suffered a stroke of apoplexy, and Major Valery Havard, long Chief Surgeon of Santiago under General Wood, has been sent to Havana to assume a higher position under his former chief.

Miscellany.

CROOK *VS.* HORROCKS.

A case of much practical importance to physicians has recently been decided in the English courts. The circumstances, as given in the *Lancet*, are briefly as follows:

"A petition was brought by Dr. H. E. Crook, formerly practising at Margate, praying for dissolution of marriage on the ground of the alleged misconduct of his wife with the co-respondent. The jury found that Dr. Horrocks, obstetric physician at Guy's Hospi-

tal, had not committed adultery with the respondent, but were unable to agree with regard to Mrs. Crook. The evidence tendered during the hearing portrayed at once romance and tragedy, and the bitterness of the cup held to Dr. Horrocks was intensified by the fact that he had in his professional capacity attended Mrs. Crook and that Dr. Crook was formerly his pupil. It appears that Dr. Horrocks was consulted by Dr. Crook for some ailment incidental to her sex from which his wife suffered. Of course, the services of Dr. Horrocks were gratuitous. At a later period Mrs. Crook bore a child to which she was devotedly attached, and in fact, according to her husband's statement, she gave up her whole life to its care. Subsequently to this event the petitioner, who had never had reason to suspect his wife's chastity, was induced to visit a female palmist, to whose vaticinations he appears to have turned a not altogether deaf ear. This reader of men's minds by their hands averred to her client that he ought to have been a barrister instead of a medical man, and as a matter of fact Dr. Crook was called to the bar. She told him that he would undertake a voyage, which Dr. Crook, in answer to counsel, said was not unlikely. There can be little doubt that the petitioner was much impressed by his communings with the palmist. He told his wife of his strange experience and gave her the address of the woman. Eventually Mrs. Crook also consulted her, and according to her evidence was told that she would be separated from her husband, 'but not by death,' and that she had broken her marriage vow.

"To what extent the foreboding thus induced was likely to prey on Mrs. Crook's mind — whether it was able to fashion a phantasy of guilt to be transmuted into a 'fixed idea' — we do not deem it prudent to decide, seeing that the case may still be considered *sub judice* so far as the respondent is concerned; but we may safely assert that the prophecies were not calculated to have a bracing effect upon any brain — much less would they act beneficially on one in unstable equilibrium. As time went on Mrs. Crook asked her husband what was meant by 'adultery,' then confessed herself guilty of the offence, and named Dr. Horrocks as her co-partner in guilt. She made a written statement of her infidelity, which was afterwards repeated and amplified. Beyond all reasonable doubt it may be accepted that, truly or falsely spoken, Mrs. Crook at the time believed in her own guilt. From the testimony of Dr. Horrocks on oath it transpired that the first intimation of the charge against him was a letter from the petitioner's solicitor. Further, that from the day that he received that letter until the hearing of the case he had no communication with either Dr. Crook or Mrs. Crook. Dr. G. H. Savage and Dr. G. E. Herman were called as expert witnesses. In the former's opinion Mrs. Crook's confession was the outcome of 'nervous unstability,' in fact, on this point she was 'under a delusion.' Dr. Herman believed that the respondent's present statement was true and that her confession was false. To obtain a judgment against a co-respondent the law requires that the evidence of adultery, if tendered by one of the parties, must have corroboration. And rightly so, for otherwise the innocent would be at the mercy of the malicious accuser. In the case under consideration there was no such corroboration in any shape or form. There was simply the confession of the respondent, which was afterwards negatived by her. She did not deny that she made the confession; nay, more, she testified in court that she believed it when she made it. Dr. Crook had no grounds to suspect his wife's infidelity before she informed him of it, and Dr. Horrocks said that when she consulted him she behaved as a prudent and chaste woman."

In connection with this case the *Lancet* reiterates the frequently made warning that, whenever possible, a physician should insist on the presence of a third person when called upon to examine a female patient.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MARCH 24, 1900

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Whooping-cough.	Diphtheria and croup.	Measles.
New York	3,651,594	1729	583	20.81	24.32	1.14	3.84	2.04
Chicago	1,819,726	—	—	—	—	—	—	—
Philadelphia	1,266,852	—	—	—	—	—	—	—
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	366	102	19.17	31.59	.54	2.43	1.35
Baltimore	506,389	240	78	20.16	26.04	.84	4.62	.42
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	126	42	18.17	12.64	3.16	2.37	2.37
Washington	277,000	153	41	23.40	21.45	1.95	2.60	1.95
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	84	31	14.28	28.56	2.38	—	3.57
Nashville	87,754	46	9	36.89	19.3	2.17	2.17	—
Charleston	60,165	38	11	15.78	5.26	—	—	—
Worcester	111,732	45	15	8.88	26.66	—	2.22	—
Fall River	103,142	65	27	20.02	32.34	1.54	1.54	—
Cambridge	92,520	60	20	21.58	16.6	—	3.32	—
Lowell	90,114	54	11	17.01	17.01	—	1.89	—
New Bedford	70,511	18	7	16.66	27.77	5.55	—	—
Lynn	68 218	33	4	24.24	18.18	—	—	—
Somerville	64,384	20	8	15.00	40.00	—	5.00	—
Lawrence	59,077	30	12	23.33	23.33	—	3.33	—
Springfield	58,266	29	2	20.80	31.05	—	3.45	—
Holyoke	44,510	17	10	29.40	5.88	—	—	11.76
Brockton	38,750	—	—	—	—	—	—	—
Salem	37,724	25	4	12.00	20.00	—	—	—
Malden	36,421	16	4	18.75	—	—	12.50	—
Chelsea	34,235	15	5	—	—	—	—	—
Haverhill	32,651	16	5	25.00	37.50	6.33	6.33	—
Gloucester	31,426	—	—	—	—	—	—	—
Fitchburg	30,523	10	3	10.00	10 00	—	—	—
Newton	30,461	17	3	5.88	29.40	—	—	—
Taunton	28,527	12	—	16.66	8.33	—	—	—
Everett	28,102	10	1	10.00	30.00	—	—	—
Quincy	24,578	10	4	10.00	40.00	10.00	—	—
Pittsfield	23,841	—	—	—	—	—	—	—
Waltham	22.791	8	2	37 50	50.00	—	12 50	—
North Adams	21,583	10	—	10.00	60.00	—	—	—
Chicopee	14,316	9	5	—	11.11	—	—	—
Medford	17,190	13	2	—	61.52	—	—	—
Newburyport	15,636	13	3	—	53 83	—	—	—
Melrose	14,721	10	2	10.00	10.00	—	—	—

Deaths reported 3,354; under five years of age 1,062; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 661, acute lung diseases 879, consumption 273, diphtheria and croup 99, measles 51, whooping-cough 37, diarrheal diseases 22, typhoid fever 21, scarlet fever 19, erysipelas 15, cerebrospinal meningitis 9.

From diarrheal diseases New York 14, Fall River 4, Baltimore 3, Worcester 1. From typhoid fever New York 8, Nashville 4, Fall River 2, Baltimore, Washington, Providence, Springfield and Haverhill 1 each. From scarlet fever New York 10, Boston 4, Pittsfield 3, Baltimore and Holyoke 1 each. From erysipelas New York 8, Boston 2, Worcester, Cambridge, Lynn, Haverhill and Waltham 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending March 17th, the death-rate was 20.3. Deaths reported 4,525: acute diseases of the respiratory organs (London) 391, measles 141, whooping-cough 124, diphtheria 77, fever 32, diarrhœa 28, scarlet fever 20, small-pox (Cardiff) 1.

The death-rates ranged from 12.7 in Croydon to 31.1 in Preston: Birmingham 23.9, Bradford 19.3, Bristol 19.3, Gateshead 18.1, Huddersfield 18.0, Hull 19.0, Leeds 20.8, Liverpool 27.6, London 18.8, Manchester 25.4, Newcastle-on-Tyne 21.1, Nottingham 18.9, Plymouth 23.0, Sheffield 24.1, Swansea 18.8.

METEOROLOGICAL RECORD

For the week ending March 24th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		We'th'r. *		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S...18	30.22	20	31	10	61	48	54	W.	S W.	16	11	C.	C.	
M...19	29.97	44	59	29	74	81	78	S.W.	S.W.	16	26	F.	R.	
T.. 20	29.71	45	55	35	87	44	66	S.W.	W.	8	13	O.	C.	.20
W. 21	29 99	32	38	26	74	41	58	W.	W.	23	12	C	C.	
T...22	30.09	36	47	23	77	54	66	S.W.	S.W.	8	14	C	C.	
F...23	29.90	44	55	34	72	40	56	W.	W.	14	19	C.	C.	
S...24	29.96	32	38	26	61	38	50	W.	W.	11	13	C.	C.	
														.20

* O, cloudy; C, clear; F., fair; G, fog; H, hazy; S, smoky; R, rain; T., threatening; N., snow. † Indicates trace of rainfall. Mean for week.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MARCH 31, 1900.

J. T. KENNEDY, assistant surgeon, ordered to additional duty at the Marine Recruiting Rendezvous, San Francisco, Cal.

J. F. PEARSON, pharmacist, appointed pharmacist from March 26th.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING MARCH 29, 1900

WASDIN, EUGENE, surgeon. To report at Washington, D. C., for special temporary duty. March 26, 1900.

WILLIAMS, L. L., surgeon. Leave of absence for two days (paragraph 179, Regulations, Marine-Hospital Service) from March 27, 1900.

BERRY, T. D., assistant surgeon. To proceed to New Orleans, La., and report to the medical officer in temporary charge for duty and assignment to quarters. March 26, 1900.

APPOINTMENT.

THOMAS D BERRY, of Texas, commissioned as assistant surgeon. March 24, 1900.

SOCIETY NOTICES.

AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION. – The annual meeting will be held at Richmond, Va., May 22-25, 1900.

C. B. BURR, M.D., *Secretary and Treasurer*,
Flint, Mich.

PENNSYLVANIA SOCIETY FOR PREVENTION OF TUBERCULOSIS —The annual meeting of the Society will be held on Wednesday, April 11, 1900, at 4.15 P. M., at the Academy of Natural Sciences.

ALEX. HERON DAVISSON, *Secretary*.

RECENT DEATHS.

GEORGE PINKHAM BARTLETT, M.D., M.M.S.S., of Woburn, died March 27, 1900, aged forty-nine years.

PAUL AUGUSTINE STACKPOLE, M.D., M.M.S S., died in Dover, N. H., March 28, 1900, aged eighty-six years.

JOHN COOPER, M.D., said to have been the oldest practising physician in Brooklyn, died on March 29th, at the Seney Hospital, where he had been under treatment for three weeks for gangrene of the foot. He was eighty-five years old and was born in London, Eng. He was graduated from the Royal College of Surgeons in 1837.

BOOKS AND PAMPHLETS RECEIVED.

Report on Leprosy in New South Wales for the Year 1898.

Bulletin of the Harvard Medical Alumni Association, No. 14, Catalogue, 1900.

A Case of Hæmatometra. By William Gardner, M.D., Montreal. Reprint. 1900.

Electrical Burns. By J. M. Elder, B.A., M.D., C.M., Montreal. Reprint. 1900.

The Exposé of Weltmerism: Magnetic Healing De-magnetized. By Preston W. Pope, M.D.

Stone in the Bladder. By H. Wellington Yates, M.D., Detroit, Mich. Reprint. 1900.

Pneumothorax from Gas-producing Bacteria. By F. G. Finley, M.D., Montreal. Reprint. 1899.

Three Cases of Ectopic Gestation. By Henry J. Kreutzmann, M.D., and Lois Nelson, M.D. Reprint. 1900.

The Operative Treatment of Uterine Fibroids. By F. A. Lockhart, M.B., C.M. (Edin.). Reprint 1899.

Advances in the Surgical Treatment of Strabismus. By Dr. Edmond Landolt, Paris, France. Reprint. 1899.

The Contagiousness of Pulmonary Consumption. By Ernest L. Shurley, M.D., Detroit, Mich. Reprint. 1899.

The Diagnosis of Gastric Ulcer, with Report of Cases. By Frank H. Murdoch, M.D., Pittsburg, Pa. Reprint. 1900.

On the Ætiology of the Nausea and Vomiting of Pregnancy. By David James Evans, M.D., Montreal. Reprint. 1900.

Further Experience with the Operative Treatment of Anteflexion. By W. L. Burrage, A.M., M.D., Boston. Reprint. 1900.

Ueber Fleischsaft, seine Gewinnung und seine Verwendung in der Krankenpflege. Von Prof. Dr. Martin Mendelsohn, Berlin.

A Rare Form of Pyosalpinx Complicating Uterine Myoma. By William Gardner, M.D., and Maude E. Abbott, M.D., Montreal. Reprint. 1900.

Stricture of the Esophagus and Electrolysis by a New Esophageal Electrode. By Charles D. Aaron, M.D., Detroit, Mich. Reprint. 1899.

Twenty-fourth Annual Report of the Managers and Officers of the New Jersey State Hospital at Morris Plains, for the Year ending October 31, 1899.

Surgical Pathology and Therapeutics. By J. Collins Warren, M.D., LL.D. Illustrated. Second edition, with appendix. Philadelphia: W. B. Saunders. 1900.

Some Casual Remarks on Prostitution and Venereal Diseases in their Relation to the Public. By Isadore Dyer, Ph.B. (Yale), M.D., New Orleans, La. Reprint. 1900.

Torsion of the Pedicle of an Ovarian Tumor with Acute Symptoms. Hospital Reports: San Francisco Polyclinic. By Henry J. Kreutzmann, M.D. Reprints. 1898-99.

Home Nursing: Modern Scientific Methods for the Care of the Sick. By Eveleen Harrison. New York: The Macmillan Co. London: Macmillan & Co., Ltd. 1900.

The Vital Statistics of Massachusetts for 1897, with a Life Table based upon the Experience of the Five-year Period 1893-97. By Samuel W. Abbott, M.D. Reprint. 1898.

Clinical Studies in Vice and in Insanity. By George R. Wilson, M.D., Medical Superintendent, Marisbank Asylum. New York: The Macmillan Co. Edinburgh: William F. Clay. 1899.

Transactions of the American Pediatric Society, Eleventh Session, held at Deer Park, June 27, 28 and 29, 1899, with the Constitution. Edited by Floyd M. Crandall, M.D. Volume XI. Reprint. 1899.

Die Ohrenheilkunde im Kreise der medicinischen Wissenschaften. Akademische Antrittsrede gehalten am 26 Juli, 1899. Zugleich Programm zur Eröffnung der Universitäts-Ohrenklinik. Von Dr. Med. E. Bloch.

Nordrach at Home, or Hygienic Treatment of Consumption adapted to English Home Life. By Jos. J. S. Lucas, B.A. (Lond.), M.R.C.S., L.R.C.P. Bristol; J. W. Arrowsmith. London: Simpkin, Marshall, Hamilton, Kent & Co, Ltd.

The International Text-Book of Surgery. By American and British authors. Edited by J. Collins Warren, M.D., LL.D., and A. Pearce Gould, M.S., F.R.C.S. Vol. II, Regional Surgery. Illustrated. Philadelphia: W. B. Saunders. 1900.

The Irrigation Treatment of Gonorrhea: Its Local Complications and Sequelæ. By Ferd. C. Valentine, M.D., Professor of Genito-urinary Diseases, New York School of Clinical Medicine, etc. Illustrated by 57 engravings. New York: William Wood & Co. 1900.

Diseases of the Stomach: Their Special Pathology, Diagnosis and Treatment, with Sections on Anatomy, Physiology, Chemical and Microscopical Examination of Stomach Contents, Dietetics, Surgery of the Stomach, etc. By John C. Hemmeter, M.D., Ph.D. Illustrated. Second enlarged and revised edition. Philadelphia: P. Blakiston's Son & Co. 1900.

Progressive Medicine: A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., Professor of Therapeutics and Materia Medica in Jefferson Medical College of Philadelphia, etc. Assisted by Charles Adams Holder, M.D. Vol. I. March, 1900. Philadelphia and New York: Lea Brothers & Co. 1900.

Original Articles.

FOLIE À DEUX.[1]

BY ARTHUR C. JELLY, M.D., BOSTON.

"Are you not in great danger of becoming insane because of your association with patients?" Such a question is asked not infrequently of physicians and nurses who live in hospitals for the insane. And surprise usually follows the answer that such a result is rare, except in cases where there is such an hereditary tendency or such an acquired condition that the person might fairly be considered liable to break down in any occupation involving hard work, long hours, and responsibility. Indeed, both sound and unsound minds remain so generally unaffected by the insanity of others that considerable interest is awakened by the exceptional case where such a contagion appears to take place. *Folie à deux*, the term most commonly used to designate this condition, has no exact equivalent in English, since it is used to include some cases which are exactly designated by communicated insanity, other cases for which Hack Tuke has suggested double insanity.

Of etiological factors, heredity is the most important. Women are affected more frequently than men. The young and the aged are more liable to be influenced than persons in middle life.

Varieties. — Two groups show clearly the effects of contagion: (1) Where A, who is insane, infects with the same disorder of mind B, who was previously sane; (2) where A, who is insane, infects with the same disorder of mind B, who was already insane. But in other cases it is doubtful how much of the disturbance is due to actual contagion; for example: (1) Where A and B, living together, suffer simultaneously from the same form of insanity due to the same causes. (2) The effect of contagion is still more doubtful in certain cases considered by Tuke under this class, where B becomes insane from association with A, not necessarily because he accepts A's morbid ideas, but in consequence of the shock produced by the news, or of the pain felt on witnessing the attack, or of the continued strain due to nursing the patient. Of such cases Tuke remarks, "It is difficult to decide how much is due to sympathy and unconscious imitation and how much to actual strain. Such cases must be very rare; and they probably occur only among relatives or near friends, except where there is a predisposition to insanity. Sometimes more than two persons are concerned."

Let us consider, first, cases where the influence of contagion is doubtful. My first illustration is furnished by two sisters who came to the hospital on the same day, one of whom was certified to as "mania" and the other as "melancholia." An hereditary tendency to insanity was denied. The elder, forty-four years of age, single, was said to have been previously in good health. She passed the climacteric one year ago. She had always looked upon the dark side and been very retiring and unsocial. She and her sister were wrapped up in each other and in their home. They had worked together many years in the same shop. One year ago she became puzzled about her work there, gave it up, and tried to work about the house. She gradually developed ideas of having done wrong, of being very weak, and tired of life. Since her sister showed symptoms of depression this patient has been much more worried. The younger sister, forty-two years of age, is married and has one child. She has had fair health up to six months ago, when her husband left her to be treated for the opium habit. Somewhat worn by her sister's condition, this disgrace was more than she could bear. Shortly afterwards she became very irritable and unsocial, and worried constantly; said everything was wrong and beyond repair; turned against her husband and child. The day before admission said, "We are all a set of lunatics." In the hospital it was recorded that these patients become quite communicative when left alone, but are so suspicious that they will not talk in the presence of others or tell what they talk about. The first is frequently noisy, excited, and destructive; the second is quiet and dull. The first became somewhat demented and died of phthisis five years later. The second is still in an asylum, moderately demented.

In October, 1897, I saw Miss E. F., forty-nine years old, single, school teacher. She had suffered from increasing depression since school closed and was unable to resume her work there. She said, "I have no hope for the future and I would commit suicide if I dared; I cannot work or eat or sleep properly." She went voluntarily to a hospital.

After E. F. had left the room, her sister S. A., fifty-one years old, single, also a teacher, said, "I am more depressed than she is, but I have not yet lost control of myself and can still make myself work." But five weeks later it was deemed necessary for her to go to a hospital. Their mother had melancholia at the climacteric and died in an asylum. Their father appears weak mentally. A brother and a sister are peculiar.

It is evident that there were present here conditions very favorable for the development of so-called double insanity — the same heredity, the same fear of becoming insane at the period when the mother broke down, the same occupation, the same manner of life, the same anxiety about a mortgage. They got along fairly well during the school year, but when vacation came and they were together constantly, each noted unfavorable signs in the other and grew more depressed in consequence; both had suicidal impulses, but neither made any attempt at suicide. Separated from each other, each made decided gain and was discharged improved, after a hospital residence of about eight months. The elder, who showed more strength in fighting the depression, has probably recovered. The younger, who was apparently the first affected, has become worse since her discharge.

In cases of this sort it must always be difficult to decide how much influence the one first affected may have had upon the other. The friends undoubtedly are inclined to conceal hereditary tendencies and to accept the explanation of sympathy and close association. But the physician should not allow himself to be misled in this way. Is it not more likely that, as a rule, we have to deal in such cases with a tendency to break down at a period of stress, due essentially to hereditary and other causes?

Let us turn now to the cases where the contagion is more evident, and consider first the group in which an insane person brings on mental disorder in one previously sane.

In February last, the agent of a tenement house

[1] Read before the Boston Medico-Psychological Society, December 21, 1899.

requested the examination of Mr. and Mrs. T., who were, in his opinion, both insane. His story was that they had occupied the middle tenement for three weeks; that their behavior had led the occupants of the lower story to move out, and the family on the top floor to give notice that they also would move if the T. family remained; that during the recent cold snap the T.'s had opened all their doors and windows, and thus the pipes in the house were frozen and much damage done; that the reason assigned by the T.'s for this excessive ventilation was that they were smothered by poisons coming from the floor above. He stated further that they had injured the floors by chopping wood in their rooms, and had lived in such a filthy way that considerable expense would be necessary to clean the place. Some one had previously reported to the Society for Prevention of Cruelty to Children that the three sons of Mr. and Mrs. T. were neglected and needed care, and the agents of this Society, after careful investigation, were prepared to take charge of the boys, provided the proper court authorized them to do so.

At a visit on February 9th, Mrs. T. appeared a well-developed woman in fair condition. She said her age was thirty-two years. Though at first suspicious and reticent, she soon talked very freely; indeed she and her husband were both talking so loudly at one time that we were obliged to separate them to understand either. She said that for several months certain detectives, "John Joyce, Mike Moore and others," had been working against her; that they had prejudiced the landlord against her, so that he had compelled her to move from her former home; that they had followed her to this house and that she heard and saw them going over the stairs and heard them talking and moving about on the roof; that they said things like this: "Now we will put some on her and she will not be able to do anything"; that then they blew down through the tenement overhead a powder which changed the color of her hair, and mesmerized her so that she become nervous, irritable and incapable of any kind of work; that at night they mesmerized her in a bad way; that frequently at night this influence was so oppressive in the air that she felt smothered and could not breathe except at the open windows. Mr. T. said that he was fifty-four years old (though he looked to us older), that he was a laborer, but had not done anything for a long time. He appeared an easy-going, somewhat demented man. He assented to each of his wife's statements not only in her presence but when alone. He was sure that he had himself heard the men make various insulting remarks about his wife and himself, such as: "We will make his wife silly before we leave them"; he believed that they put things into the food, that they threw lights upon them in the night, and could in this way see through the floor. Both at this time and again ten days later, when seen alone, he appears to have accepted his wife's belief in the conspiracy, and stated positively that he had heard the voices. The youngest child, ten years old, was interviewed in the room with his parents. He was sure of his mother's story and especially about the men going up and down stairs; and he had identified one of them as a man who worked on Broadway. Mrs. T. said that the other two boys knew the story to be true, and would corroborate everything she said. We did not see them.

Something may be inferred as to the infrequency of this affection from the fact that in the records of the Registration Department of the city, from 1870 to date, I have found only six examples of possible *folie à deux*.

In the first, two old maids, one of whom was undoubtedly insane, lived together in a small room, locked themselves in, quarreled, made loud noises, threw things out of the window, annoyed the neighbors, and declined to pay rent or move away. They claimed that Phillips Brooks was taking care of them. The evidence obtained did not warrant the conclusion that the second was seriously affected by the disorder of the first.

In January, 1878, S. B. T. was sent to an insane hospital. She was forty years of age and a widow, without hereditary tendency to insanity. Her husband had died three months previously of pulmonary hemorrhage, when she was out of the room. She became sleepless and distressed and blamed herself with having killed him. She attempted suicide by hanging and by taking poison. In March of the same year this record was made: C. O. S., sister of S. B. T., also a widow, fifty-four years of age, was obliged to go to a hospital. Her husband had died of consumption one year before. Since then she had been lonesome and had worried about money matters. Recently she had compared her condition with that of her sister, whom she had visited at the hospital and who blames this patient for her confinement there, so that the patient fears that she has done wrong in this and other ways, and talks of having committed the unpardonable sin and of taking poison. The subsequent history is as follows: The first of these is demented and now in the Worcester almshouse; the second appeared to recover and was discharged from the hospital three months after entrance, but six months later re-entered the hospital, was excited, noisy, violent, refused food, failed rapidly, and died of exhaustion in a few days.

In June, 1880, an examination was requested of Henry H. and his sister. He was then thirty-four years of age, single; had been at Taunton Hospital at least twice previously, when he was suspicious and had delusions of persecution. For three years his sister had taken care of him, and of late he had been most of the time in bed and was evidently demented. At this time his sister was thirty-eight years of age, single. She said that one month ago she was followed by men, whom she heard talking in the next room subsequently, so that she sat up all night with a hatchet in her hand and had been on watch ever since with the doors locked, windows barred and screened. She said that she heard voices continually. She has been very devoted to her brother until recently, when she has been so absorbed in watching that she has neglected him. The neighbors report that she is frequently up all night, talking loudly and making strange noises, and that recently she was out in the yard all night in her night clothes. She appears thoroughly exhausted. The brother was sent to an insane hospital, and, as far as known, is now in one of the chronic asylums. There is no record that the sister was received at any of the hospitals.

In 1877, examination was requested of R. S. D. and his wife. He was a police officer, forty-seven years of age, and had had several attacks of excitement, in which he was maniacal and expressed religious delusions; was violent and dangerous. His wife

reports that recently he tried to throw their child out of the window. His prominent delusion is that he is Jesus Christ. His wife gave birth to a child five months ago and has been sick and depressed since that time. Her husband has labored with her in an insane way and has tried to convert her, and has impressed his delusions upon her so that she has come to believe his claims to divine power to some extent; has been working too hard and has lost sleep, and has evidently not recovered her strength since the birth of the child. She thinks now that she can never get well. The husband was sent to an insane hospital and the wife to the Boston City Hospital, with the expectation that she would probably have to go to an insane hospital later, but I have been unable to find any record of her in either of the insane hospitals.

In July, 1877, the R. family was examined, at the request of the police. At this time there were at home the mother, age sixty-two, and three daughters: M., thirty-three years of age; J., thirty years of age; and C., twenty-five years of age. J. had had three attacks of insanity and had been twice at the Taunton Hospital. A son, John, committed suicide about a year ago by jumping into a furnace. After his death his sister M., who had been especially devoted to him, became depressed, confused, resistive and suicidal, and was sent to a hospital, where she remained about six months. The daughter C. had an outbreak of excitement in the mill where she worked recently, and was discharged. She then posted placards in various parts of the town, denouncing the widow of her brother John. She believes that John's wife gave him powders and drugs which made him insane and affected the other members of the family, and thus made M. insane. The other members of the family appear to have accepted this delusion. The examining physician saw one of these posters, which contained incoherent threats against John's widow and other people, and indicated a dangerous state of mind. Nothing was done about having any member of the family go to the hospital at this time, but subsequently C. was sent to Danvers and is now at Medfield.

In 1890 A. K. and her two daughters were sent to Worcester. The mother was a widow, sixty-five years of age, who stated that she heard people on the street reviling them and threatening them, that there is a conspiracy against them, and that her daughter, M. K., was kidnapped, drugged and married, gave birth to a child, that was stolen from her, and subsequently her womb was mutilated, and that since her return she has never appeared as well as before. The mother is in constant terror of more frightful things being done by the conspirators. The daughter E. K., twenty-nine years of age, single, is excitable, has various delusions, and is somewhat demented. The daughter M. K., twenty-eight years of age, single, was first examined two years ago, when she was excited, noisy, incoherent. At that time her mother would not consent to her removal to a hospital. Now she appears thoroughly demented. It was not at all clear that the delusions of the mother had been accepted by either of the daughters, but the mother was the superior intellectually, and controlled the actions and conduct of her weak-minded daughters. All three are now at an almshouse.

It is generally admitted that in asylums one rarely sees the insanity of one patient modified by that of another. A very thorough study of two cases has been made by Finkelstein, who quotes the following authors to show how rare the condition is: Parschappe relates an instance where one patient refused food, and was fed with a tube, and his neighbor imitated him and required feeding in the same way. Marandon de Montyel mentions having seen one patient with delusions of persecution who adopted the hallucination of another patient. Kowalewsky says, "I have practically never had opportunity to see a patient infected with the delusion of another." Jakowenko says, "We have sometimes observed paranoiacs, with delusions of persecution, influencing in a marked way their companions, especially those congenitally weak-minded or with dementia paralytica, and the like. Yet we never once were able to prove that the latter had adopted the system of delusions entire. In one case one paranoiac transferred to another paranoiac a part of his delusions."

The following is a brief outline of Finkelstein's first illustration: Nibung, male, thirty-one years old, in vigorous health, was a case of chronic hallucinatory paranoia. The ravens in the garden joked and made fun of him. His relatives let them loose on him. His food did not go down, but up into his head, and was taken out by the ravens. In stereotyped form he repeated his delusions constantly to everybody. Linnama, male, twenty-six years; said to be naturally a quiet man, easily influenced, who would suffer injustice rather than have trouble. Admitted hallucinations and delusions. Said that he had enemies and was afraid to sleep lest they might do something to him; that he saw black men who wanted to harm him and who assaulted others; that he prayed God to make them good men. Showed weakened power of attention and disorder of association. Nibung took Linnama under his protection, took him about with him, reached things for him at table, put him to bed at night, and declared repeatedly to bystanders that the ravens did not let Linnama sleep night or day. This relation continued from May to July. After July Nibung had nothing more to do with Linnama. In spite of this close relation there was no change in Linnama for about three weeks. He remained sluggish and usually silent. He said he feared the night and the black men, who cried out continually and kept him awake. June 1st there came a great change, shown by a certain pathological tendency to imitation. He was the exact copy of Nibung. They went everywhere together. They did exactly the same things. After this had lasted for one month Linnama first declared that the ravens kept him awake and talked to him just as they did to Nibung. Soon afterwards he adopted Nibung's hallucinations and delusions in stereotyped form. With these transformed delusions he remained till discharged two months later, and never expressed a single one of his earlier delusions and hallucinations. This is the more remarkable when we remember that Nibung had nothing to do with him during the last two months.

Kiernan has reported several good illustrations of this condition, among which the following is an interesting group: A Presbyterian clergyman, liberal education, American, forty years old, married, strong hereditary taint, abstinent, was admitted to the asylum several times and discharged during periods of comparative clearness. The interest of the case lay in the companions by whom he was accompanied, all of whom were permeated with ideas of a delusive

character based on the improvement of the insane and the conversion of them into useful members of society of almost the same character as the ideas of the minister. The first case was a general paretic, one of those wandering cases who come to the front when any popular uprising happens. He attempted to ameliorate the condition of the insane by purchasing five dollars worth of red and blue lead pencils and distributing them among the patients. The second member of the group was a case of chronic mania with imbecility who was very religious and full of ideas of serving God by ameliorating the conditions of the insane. The third individual was a case of hebephrenia who mingled in his conversation religion, regrets for former habits of life, and the delusions already mentioned. The fourth case was a similar form of insanity to the minister, but shading into dementia. The fifth member was an epileptic slightly demented. When again a patient the minister displayed great power of collecting similar groups.

Pathogenesis. — Recognizing my inability to deal with the very subtle problems presented here to the psychiatrist, I shall merely outline the subject and then quote from some of the prominent writers. In this affection we have to deal apparently with the results of sympathy and suggestion. Few men escape being influenced to a certain extent, consciously or unconsciously, by their companions. Intimate association with a case of profound melancholia causes many a man to feel a certain sense of fatigue, which expresses itself in restlessness or increased irritability or a feeling of tension or a desire for relaxation or amusement. And if the sympathy is very great and the heredity the same and the close association long continued, it is not difficult to see how the melancholia of No. 1 may bring about grave depression, possibly amounting to melancholia, in No. 2.

The delusions of the insane, however, are almost always easily recognized as such. Indeed, so generally is this true that for many years delusion was held by the courts to be the test of insanity. In order, therefore, that the delusion of an insane person may be believed by one who is sane, peculiar conditions are necessary to make the suggestion effective. No person will believe a thing which appears to him absurd and impossible, no matter how frequent or how forcible the suggestion. Therefore, the delusion itself must have a certain character; it must appear to the listener probable or at least possible. The individuals concerned may be characterized somewhat thus: The first is relatively the stronger character; he is vigorous, active, aggressive, persistent; the second is comparatively weaker mentally and perhaps physically also. The yielding process is a gradual one.

A child may be made to believe any statement of its parents with comparative ease, because he is accustomed to receive the parent's statements as authoritative, because his imagination is lively, his experience too limited to furnish proper standards for comparison, and his judgment undeveloped. It is not surprising, therefore, that certain of these cases show the adoption of the parent's delusion by a child or youth of limited capacity. Four such are reported by Lasegue and Falret, whose entertaining study upon the subject appeared in 1877. In their first case a mother caused her child to accept her insane belief. The little girl, in telling the story of the delusion, softened it so that it was more readily believed by the neighbors. Having given up certain statements, which they showed her were impossible, she gained more weight for those which she retained, and the neighbors espoused her cause and went to the authorities.

Moreover, the child sometimes makes addition to the accepted delusion. This was illustrated in Case V of Lasegue and Falret, where the mother believed that they had inherited a fortune, and the daughter added the delusion that several priests were keeping it from them. As these authors have pointed out, the conditions are different where an elderly person accepts the delusion of a younger person. The imagination is no longer active and experience has furnished certain standards for comparison, and if the judgment fails to correct the error, the resultant belief is usually merely a sort of passive acquiescence, without additions, expressed, perhaps, by such words as these: "From what you say there cannot be any doubt about it."

One of the most remarkable features of this condition is the modification in the story of the originator which takes place under the influence of the other partner, so that the whole presents a much more plausible aspect. Where one insane person adopts the delusion of another we have conditions similar to those we have just been considering, namely, intimate association of two individuals, frequent repetition of a story by one and its acceptance after a time by the other, who is usually the weaker.

A. E. McDonald, in an article upon "General Paresis," writes as follows: "I have myself observed more tolerance of the delusions of others, even amounting to belief in them, among paretics than in the insane of other classes. Ordinarily an insane man will recognize wherein his neighbor is deficient in sense, while strenuously maintaining his own soundness, but a paretic's delusions are extensive enough to embrace all mankind. When one of them has given a summary of his wealth, the others if appealed to will often endorse his statements, but always adding that, wealthy as he is, they are still more so. One of my patients indeed makes this belief the basis for his own extravagant delusion, for accepting the claims to wealth made by his companions as true, and having been before his admission a gambler, he tells me in confidence that he is about to open a faro bank in the ward and so possess himself of their millions. The prominent differences between the general paralytic and those of insane of other forms are seen in their greater extravagance, their want of permanency and in the absence of sequelæ and co-ordination. The delusions of the paretic are absurd and impossible, vary constantly, and are utterly contradictory and incompatible."

Spitzka, writing upon the "Pathological Psychology of Progressive Paresis," expresses this view: The chief intellectual phenomenon of the paretic (during the quiet interval) is a loss of his proper sense of self-consciousness; his sense of self-consciousness depends on his proper appreciation of his surroundings; the appreciation of his surroundings depends on the association of numerous impressions which have acted on him during his lifetime, as the teachings of experience and instructors, and these impressions have become either destroyed, or if they exist, are not associated.

Finkelstein's conclusions are as follows: In both these cases chronic paranoiacs with delusions of perse-

cution were the active persons, and repeated constantly the same delusion in the presence of the passive persons, who were strikingly weak and apathetic subjects. To the cumulative influence of such repetition great weight must be attached. He calls attention to the influence of the will in the production of this condition, and says that this showed the psychic infection first, and not till afterwards came the adoption of delusions and hallucinations. Emphasis should also be laid upon a condition that favors a transformation of delusions, namely, a condition of the emotive sphere in both. It is difficult to speak here of the importance of the psychological elements of personality, since we are dealing with fully developed forms of insanity in which the influence of the intellectual sphere is difficult to determine.

Jakowenko says, "In *folie à deux* it seems now most probable that the intellectual side alone plays a very small rôle if any. Of much more weight is the emotive sphere of the patient, since the intellectual influence is only of such character as to increase the chances of a success already essentially prepared by the emotive state."

Finkelstein adds, "This point of view finds support in both of our cases. Both active agents were energetic, persistent natures, with very intense motor activity, closely associated with their delusions. The psychic infection expressed itself in both cases in the form of pathological conditions of the motor sphere and not till afterward in identity of delusions and hallucination."

These phenomena either did not appear in the cases of Lasegue and others, or received no attention.

Diagnosis. — Separate the individuals and study the story of each. One may be simply yielding to strong personal influence in the presence of the other, or he may not have passed the bounds of excessive credulity. Such credulity is often shown by the friends, who believe very absurd stories told them by patients; but they usually go home and do nothing about the matter. The conduct of No. 2 will usually show whether he is sufficiently affected to be called insane. In our case the husband, when examined alone at the City Prison, showed such marked excitement and demanded so earnestly the arrest and conviction of the conspirators that neither of the examining physicians had any hesitation about signing the paper.

Prognosis. — In general, we may say that the second individual is usually less severely affected than the first, and will probably recover if prevented from associating with the first, especially if removed from the environment where the affection began. Often the recovery is very rapid. This is strikingly shown in a case of Lasegue and Falret. Twin sisters, who had been very unfortunate, were affected. Josephine developed delusions about being punished by the authorities, and after two months Lucile yielded accepted the delusions, and became the more active. On the first day of separation Lucile, who was the one more recently affected, answered timidly and related with hesitation and excuses the events which had preceded the expulsion of her sister. "We were both so tormented," she said, "with the fear of prison, perhaps I even more than she." On the fourth day she said, "It was my sister who had the fear. I believed her and I was mistaken. If I had been stronger, I might perhaps have prevented her from being where she is."

A similar result was reached in our case. Mr. T., when told by the hospital physicians that such talk was nonsense, showed the ease with which he could be influenced by the remark, "Well, you doctors must know. If you say it is nonsense I suppose it is"; and at an interview with his wife shortly afterward, he met her statements about mesmerizing and conspiracy every time by saying, "Don't talk that stuff. Let's be sensible."

A case is cited by Tuke, where a wife was excited, had delusions and hallucinations of hearing, sight and smell, and subsequently the husband was affected with the same hallucinations and delusions, but was not excited. Both recovered without being separated.

It need hardly be said here that a bad heredity would alter an otherwise good prognosis. Moreover, one can readily conceive that a suspicious or deluded adult might so influence the development of a young person that pernicious habits of thought and action would become established; that subsequent separation would not affect these habits; and that in this way a very serious permanent injury might be done, even though actual mental disease did not follow.

Treatment. — For the established disorder, separation is the first requirement; and if the contagion is the essential causative factor, separation will usually be followed by recovery. But in this, as in many other affections, prophylaxis is the field for our work. Separation is demanded whenever it is clear that any other member of the family is feeling the influence of the patient in a serious way. This is especially important where there are children more or less under the control of an insane parent. A relation essentially similar though less striking exists frequently in a household, without receiving due consideration from the family or the physician. I refer to the very large number of instances where one member who is an invalid of some sort exerts a blighting influence upon susceptible companions. The doctor should be all the more alert, because the responsible member of the family usually fails to recognize the existing relation or to appreciate the present and future danger. This proposition holds true in regard to the milder cases, where the influence exerted is merely of a depressing nature, as well as where the suggestion is of suspicions and delusions. When to insist upon separation, and how to convince the friends that it is necessary, are problems that demand for their solution our cleverest judgment and nicest tact.

THE USE OF THE ANGIOTRIBE.[1]

BY J. RIDDLE GOFFE, M.D., NEW YORK,
Professor of Gynecology at the New York Polyclinic Medical School and Hospital, and Visiting Gynecologist to the New York City Hospital.

For the introduction of the angiotribe into this country the medical profession probably owes more to Dr. Clement Cleveland than to any other member of the profession. He was the first American surgeon to use it, his first case dating January 9, 1899.

It seems very natural that from the use of the forceps for the control of hemorrhage in hysterectomy

[1] Read at the meeting of the New York State Medical Society held at Albany, January 30, 31, and February 1, 1900.

there should be evolved an instrument capable of supplying sufficient pressure in a brief time to accomplish what was done by the clamp forceps in thirty-six to forty-eight hours. Indeed, experience has led operators who were using the forceps to lessen constantly the time that was considered necessary to leave them in place. As the time was shortened it became necessary to use a more and more powerful instrument, until finally it dawned upon the mind of Doyen, of Paris, that an instrument of sufficient power might be used to produce the same effect upon the blood-vessels in two minutes as the light forceps required thirty-six hours to accomplish; hence the angiotribe. The angiotribe, therefore, is simply a strong and heavy artery or tissue clamp. It has found its most general application in gynecological surgery, but there seems no reason why its range of application should not be extended to almost all surgical operations in which the control of hemorrhage from large blood-vessels is involved.

History. — The credit of the invention belongs to Doyen, of Paris. In 1897 he devised a heavy clamp forceps, and reported a number of successful cases with its use. He named it the vasotribe. Thumin, of Berlin, after experience with the Doyen instrument, made it stronger and heavier at all points and improved the attachment for applying pressure. The peculiarity of Thumin's instrument is that the pressure is applied by means of a lever with an eccentric attachment. In 1898, Tuffier, of Paris, modified the method of applying pressure by means of a screw and nut in the form of a wheel, for ease in screwing it down. Tuffier gave his instrument the name of the angiotribe, or vessel crusher.

In connection with the development of this instrument, it is well to remember that one of our own countrymen, Dr. J. Dougal Bissell, of New York, is entitled to the credit not only of having conceived the idea, but also of having made some experimental investigations looking to the application of this principle. In what I may say, therefore, regarding Dr. Bissell's instrument, it should be understood that it is not a modification of Doyen's or of Tuffier's, but is the outcome of original study, the goal of which was almost within Dr. Bissell's grasp when the description of the Doyen instrument reached this country. I take pleasure, therefore, in showing the model that Dr. Bissell had devised, the first crude instrument which he made. Dr. Bissell realized that the blades, or jaws, of the instrument should approach each other as nearly as possible along parallel lines, instead of from heel to toe, as in scissors. To accomplish this, it was necessary to have the compression surfaces perpendicular to the handles; this, however, made an instrument difficult of application in a small cavity like the vagina, and as you will see in the model, an effort was made to overcome this by tilting the surfaces of application at an angle between the perpendicular and the parallel. It has been found, however, in practice that the scissors' action is satisfactory, although Dr. Bissell, in his perfected instrument, still places the jaws at an obtuse angle to the handle, claiming thereby that the instrument is more convenient of application.

With this powerful instrument the tissues are crushed to the thinness of tissue paper, and the walls of the blood-vessels are compressed to a condition of agglutination. Tuffier claims that he secures, by screwing the instrument down to the proper notch, a pressure of 3,000 pounds. Thumin's instrument gave the same amount of pressure, but Dr. Bissell maintains that he finds in actual practice that a pressure of about 1,000 pounds, which his instrument affords, is entirely sufficient.

All these instruments that I show you are simply heavy clamps, but to accomplish their purpose certain features are necessary. A groove is made along the middle line of each jaw from the heel to the toe; this leaves a short space in the blood-vessel where it is not compressed, and allows the formation of a blood clot there. The outer edges of the jaws should be smooth and rounded. If a sharp edge is left the tissues are apt to be cut and the whole effect of the instrument lost.

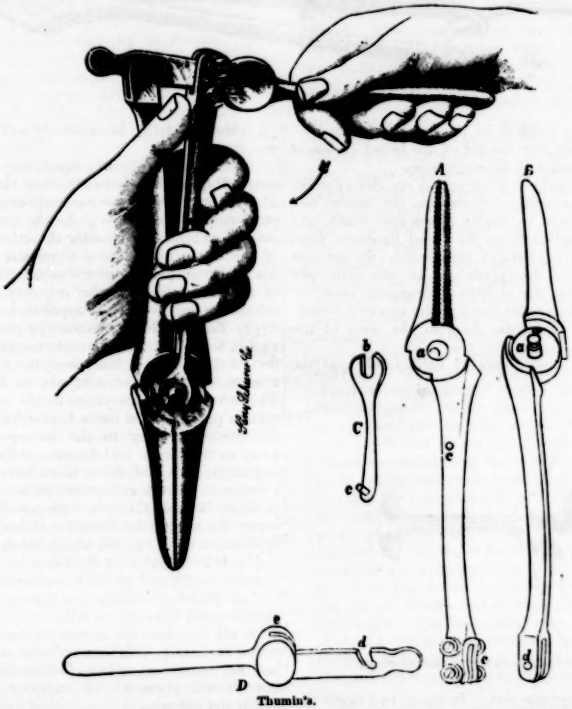
Tuffier's angiotribe.

In hysterectomy the instrument is applied as any clamp would be, and after the nut has been screwed down to the required point indicated, it is held in position for two minutes; the uterus is then cut away, and my custom is to run my knife right along the edge of the jaws. Some operators maintain that it is better to leave a short stump of tissue extending beyond the edge of the jaws, and Dr. Cleveland makes the point that this is essential to the complete control of hemorrhage on account of the blood clot formed in this tissue. My opinion is, however, that the agglutination of the walls of the vessels at the points of pressure, and the blood clots formed at the groove in the jaws and at the approximal side of the instrument, are the essential hemostatics. If these give way the distal blood clot would be of little avail in withstanding the blood pressure. We have then, in my opinion, four barriers against the escape of blood: the two

compressed surfaces of the blood-vessels and the two blood clots. I have had experience with the Thumin instrument, with Tuffier's angiotribe, and with Dr. Bissell's compressor; all three instruments were successful in controlling hemorrhage, but I have used Tuffier's angiotribe more than either of the others and like it the best. My use of it has been exclusively in gynecological work and embraces 16 cases.

Of these 16 cases, one was a vaginal hysterectomy for multiple uterine fibroids, complicated by cystic ovary and unilateral salpingitis; one case of removal of the ovary and Fallopian tube of the left side for ovarian abscess; 10 vaginal hysterectomies for double pyosalpinx, and four vaginal hysterectomies for cancer of the uterus. In the case of vaginal hysterectomy, after the vagina is incised around the entire circumference of the cervix, and the bladder is dissected off of the uterus, the angiotribe is passed in, first on one side, and then on the other, grasping the base of the broad ligament in its jaws the full length of the blades. It is important in applying it here to adhere closely to the cervix in order to avoid the ureters. Careful examination is made by sight and by touch to exclude all tissue except the broad ligament. The jaws are then tightened and the pressure put on by the screw to the extent indicated by the index. This ensures a pressure of 3,000 pounds. When the tissue is very thick it requires considerable force to screw the nut down to this mark, and unless the operator steadies the instrument by firmly grasping it with both hands, the tissues are apt to be dragged and pulled about during the turning of the nut by the assistant. To assist in steadying it, I have found it advantageous to press the instrument against the bones of the pelvis at the outlet. After the nut has been screwed down the instrument is held in place for one minute, at the end of which time the uterus is cut away up to the tip of the blades by sliding the knife along the side of the jaws; at the end of the second minute — and this is carefully timed by the watch — the pressure is relaxed and the instrument removed. The lower half of the broad ligament on the opposite side is then treated in the same way. The uterine arteries are thus sealed and the uterus is set free from its lower attachments. Time might be saved by using two instruments, applying the second to the tissues while waiting for the first to do its work. It may be found by further experience that the time of applying pressure may be shortened very much and also the amount of pressure reduced.

Great facility is now gained for dealing with the adhesions which may exist about the tube and ovary.



Thumin's.

It is my custom then to select for the next step that side of the uterus in which there is the less amount of disease, and the appendages are the more easily brought down. The upper half of the broad ligament is then grasped in the jaws of the instrument as before, reaching now on the broad ligament beyond the ovary and tube, when the instrument is impressed and the tissues cut away as before. Ordinarily the full width of the broad ligament can be included in two applications of the instrument, but if that seems difficult or uncertain of accomplishment, it does not prolong the proceeding very much to crush what tissue can be easily reached in the second application, and then go to the free border of the broad ligament in a third application of the angiotribe.

This same method can be repeated on the opposite side, or, as is frequently my custom, the uterus and appendages can now be drawn down into reach and the angiotribe applied down the broad ligament from its free border at the horn of the uterus. In the case in which I removed the appendages of one side only I simply developed the pedicle by dragging these organs down into the vagina through the anterior fornix, and applied the angiotribe close to the horn of the uterus.

In two of the cancer cases I deliberately put the angiotribe to a supreme test. In these two cases the disease had invaded the base of the broad ligament on each side, and I subjected them to hysterectomy for the purpose of discovering the efficiency of the instrument in tissue infiltrated with cancerous disease. I found it fully as successful in controlling hemorrhage as in the other cases. In none of the 16 cases did hemorrhage occur from the tissue compressed by the angiotribe. In one case, however, there was considreable oozing, and it became necessary to pack additional gauze into the pelvis to control a sharp leakage from the posterior vaginal wall.

In one of the advanced cancer cases I made use of Dr. Bissell's compressor, and in the other I used a Thumin on one side and a Tuffier on the other. All seem to work equally well. The thin ribbons of tissue left by the angiotribe are either revivified or wither up and disappear in some inconspicuous way; at any rate, nothing is ever heard or seen of them, and the vaginal discharge after a hysterectomy by the use of the angiotribe is almost *nil*.

In one of my recent cases, by some inadvertence, the instrument was screwed down beyond the signal mark, and when the instrument was removed hemorrhage occurred. I can only account for this accident by the fact that in screwing the instrument so tightly the tissue was cut at the edge of the jaws. I reapplied the angiotribe immediately and the hemorrhage was controlled.

Dr. Bissell's vessel crusher.

The ribbon of tissue formed by the angiotribe.

Advantages. — (1) The superiority of this method of controlling the blood-vessels over the former method of applying forceps becomes apparent at once. By the former method forceps had to be left in place as they were applied, one after the other, in the progress of the operation. These filled the vagina more or less and impeded the progress of work. In the use of the angiotribe, on the contrary, more and more room is gained with each application.

(2) The handles of the forceps protruding from the vagina were a great source of annoyance and discomfort to the patient. Moreover, the forceps had to be removed at the end of thirty-six or forty-eight hours. This was a great annoyance to the patient, and in a certain proportion of cases hemorrhage occurred from the tissue adhering to the forceps and being torn away as they were withdrawn. After the use of the angiotribe none of these disturbances arise; convalescence is smooth and comfortable. Indeed, my experience is that there is very much less pain after using the angiotribe than by either the old forceps application or in the use of ligatures.

(3) It is superior to ligatures in two respects: it is more easily and quickly applied and it is attended by less discharge during convalescence, whether the ligature used is catgut or silk.

In my opinion, the angiotribe has a field of application in dealing with hemorrhoids, and, while I have had no actual experience in this line of work, I believe it will prove to be superior to the ordinary clamp and cautery.

Progress in Great Britain. — At an inquest recently held in Belfast the coroner remarked that the post-mortem examination had been made very satisfactorily by Dr. Harriett Niel, and that this was the first instance on record in the country of such a public duty having been discharged by a woman. Another sign of diminishing prejudice is furnished by the announcement that medical women will be admitted to the Liverpool School of Tropical Medicine on equal terms with men. In view of the fact that many medical missionaries are women, it would seem only reasonable to give them every opportunity to fit themselves for their future work. — *Medical Record.*

THE PROBLEM OF BOSTON'S INSANE.[1]

BY PHILIP COOMBS KNAPP, A.M., M.D., BOSTON,
Secretary of the Boston Insane Hospital Trustees.

The Boston Society for Medical Improvement took an active part in the movement which ended in placing the Boston Insane Hospital and the insane of the city of Boston under the charge of an independent board of unpaid trustees. It is therefore fitting that the members of this Society who have acted on that board since its formation in 1897 should give an account of their stewardship.

It is my province, however, to speak only of one problem which confronted us when we took charge of the insane in 1897 — a problem which has confronted the city for many years, a problem which still confronts us to-day — the problem of the best method of providing for the insane of the city of Boston. On the 30th of September, 1899, there were 1,636 insane persons having a settlement by law in the city of Boston, unable to support themselves and for whose support the city is liable. The question is, How shall these persons be provided for in the best and most economical manner?

It will be of advantage to review, very briefly, what the city has done for this unfortunate class in the past, although such a review can hardly be flattering either to the medical profession, who should have urged a different course, or to those who had the matter in charge in past years.

Up to 1833 the city's insane were cared for (?) in the workhouse and the jail. In 1765 Thōmas Hancock bequeathed £600 to the town "for a convenient house for the reception and more comfortable keeping of such unhappy persons as it shall please God in his providence to deprive of their reason," but the selectmen declined it because there were not enough insane persons in the province to warrant its acceptance. Their foresight reminds us of certain acts of their successors, who have not, however, shown similar reluctance to receive money.

In 1833 the Worcester hospital was opened, and the Boston insane in the workhouse and the jail were sent there. Four years later the Worcester hospital was overcrowded and the Boston patients were sent back again. At that time Mayor Eliot reported that, "while the law required Boston to provide a receptacle for the insane of Suffolk County, humanity required her to provide a hospital for the insane in the House of Industry." With but one dissenting voice it was voted to build such a hospital, and in 1839 the Boston Lunatic Hospital at South Boston was opened — the third insane hospital in the State.

The new hospital stood between the workhouse and the jail, and one board cared for the three institutions. This was not out of the way in 1839, but the hospital stayed next to the jail until 1895, and under the same management until 1897. It may be of interest to note that the insane in the House of Industry had been kept permanently in strong wooden cages on wheels, but as a mark of special kindness, the cages were wheeled out of doors in fine weather, and the patients were wheeled over to the new hospital in these cages, which were promptly destroyed. The new hospital had two three-story wings, each ward consisting of a corridor with six strong cells on each side. A short plank was built into the wall in the corner of the cell for a seat, and, with a mattress, constituted the furniture of the room — a slight contrast to present customs. One of these seats, however, was still in existence when the hospital was abandoned in 1895. Four years later eight strong cells, like those of a prison, were built in a cottage in the rear. Three years later still, in 1846, the wings were enlarged and associated dormitories instituted, the first of the kind in the United States. This date, 1846, is an important one to remember, for it is the last time on record when the city of Boston has taken the lead in introducing better and more humane methods for the care of its insane.

For forty years the conditions remained practically unchanged. The hospital was overcrowded soon after it was built; it stayed overcrowded until it was abandoned. The monotony of the story is depressing: overcrowding, temporary relief by transfer to the State hospitals; more overcrowding, more transfers, year in and year out. Add to this the increasing difficulty of attempting modern methods in a hospital out of date and out of repair. It is a credit to the staff that the kindness and humanity commended by Dickens in 1842 were still continued. During those forty years this hospital accommodated about 200 patients, and the rest of the city's insane, an ever increasing number, were sent away to the State hospitals. In 1865 an effort was made to provide for all the city's insane in a modern hospital; a farm was purchased in Winthrop, plans were drawn and accepted for a hospital for 500 patients, at a cost of $500,000; and then, for some unknown reason, the project was blocked, and another plan substituted which resulted in building the Danvers hospital at a much greater cost, nominally for Boston patients, although it contains fewer than any other hospital. It is currently reported that in consequence of this failure to build a modern hospital for its insane the city lost a bequest of $500,000 for the new hospital.

In 1886 the city made further provision for its insane by remodelling the wooden building at Austin Farm which had been used for female paupers, as a building for the quiet insane. This was a ramshackle fire-trap, wholly unfit for the purpose, denounced by every one who had to do with it, and finally condemned by the new State Board of Insanity, and abandoned a year ago. In 1893 the present building at Austin Farm was occupied, the first building that the city of Boston had erected for its insane in fifty-four years. The following year the other buildings at Austin Farm were occupied, and in 1895 the old hospital at South Boston was finally abandoned and the patients transferred to the new buildings at Pierce Farm.

The hospital as now established, in two divisions over half a mile apart, can accommodate about 500 patients. Although built within the last decade, it is by no means a modern hospital. The buildings are of "slow-burning" construction instead of brick or stone, the administrative, domestic and agricultural buildings are old and inadequate, there is no suitable accommodation for nurses, and the hospital itself is below the standard of the State hospitals. Turin and Bologna, in 1890, had far better equipped city insane hospitals than Boston has to-day, and their hospitals were inferior to the government insane hospitals of Italy, at Imola and Reggio-Emilia.

The city of Boston has thus gone on for fifty years

[1] Read before the Boston Society for Medical Improvement, January 22, 1900.

and more adopting no definite plan of action, neither developing its own hospital into a first-class modern hospital large enough to accommodate all its insane, nor yet abandoning it altogether and sending all its insane to the State hospitals. On the 30th of September, 1899, there were 508 patients in the Boston Insane Hospital and 1,128 supported by the city in the State hospitals, at the cost of $179,166.67 in the last year. These were distributed as follows:

Danvers	73
Medfield	376
Taunton	77
Tewksbury	69
Westboro	133
Worcester Asylum	80
Worcester Hospital	142
Total	950

In special institutions, not transferable to an ordinary insane hospital:

Boarded out	26
Criminal insane, Bridgewater	35
Dipsomaniacs, Foxboro	40
Epileptics, Monson	22
Feeble-minded, Waverley	40
Hospital cottages, Baldwinville	15
Total	178

About 35 patients in the Boston Hospital paid their board. Meantime the State has built the new hospital at Worcester, and the hospitals at Northampton, Taunton, Danvers, Westboro, Tewksbury, Bridgewater and Medfield, of each of which Boston has paid over one-third the cost, and one of which would have been unnecessary had Boston developed its own hospital.

The cause of this policy — or lack of policy — is hard to seek. First of all, perhaps, we must accuse the lack of interest on the part of the public in the welfare of the insane. Gross cruelty, of course, would not be tolerated, and the public to-day recognizes that it does not exist in our asylums; but the public is unfamiliar with hospitals and their methods and believes complacently that because fifty years ago Massachusetts was in advance in its treatment of the insane, it is so to-day — a comfortable delusion, like that of the efficacy of our public schools, the intelligence of our Congressmen and other stock boasts of our Fourth of July orators. In the next place, we of the medical profession have been and are at fault in not keeping in touch with our hospitals for the insane as well as with our general hospitals, and demanding equal facilities for scientific research and the care and treatment of the sick. The insane hospital needs its special facilities for what has aptly been called "psychical asepsis," as our operating theatres need their facilities for physical asepsis. Lastly, both State and city have until the last year or two pursued a policy fatal to progress. The insane have been put under the control of boards which contained no one with expert knowledge of insanity, and whose other duties were so exacting that they had scanty time, even if they had had the knowledge, to conceive or to execute any broad and comprehensive plans for the care of the insane. When, in addition, membership on these boards became of brief tenure and was influenced by political considerations, there was little likelihood of the development of any permanent policy. That has now fortunately been changed, and the last report of our new State Board of Insanity gives promise of a better state of things.

There is, I think, little to be said in favor of the policy which the city has pursued for fifty years and more. It has been a makeshift, temporizing policy, without any system or intelligent plan. The physicians in charge of the hospital have recorded their protests and their pleas for adequate accommodations annually in their reports and have done their best for the patients entrusted to them in spite of the handicap of their accommodations. There is, furthermore, a manifest injustice in the policy. Why should A, a citizen of Boston, becoming insane, be kept in the city, while B and C, equally citizens and with equal rights, are sent forty miles away? Either the city should give up caring for its insane in its own hospital, abandon the hospital altogether and send all its insane to the State hospitals, or the Boston Insane Hospital should be developed into a first-class modern hospital, capable of accommodating all the city's insane. The latter course is, I believe, the one to be adopted. In spite of the fact that the hospital in Boston is inferior to the hospitals of the State in its buildings and accommodations, patients and their friends invariably prefer it to the State hospitals and are sometimes ready to pay the patient's board in order to keep him there. The reason is obvious. If an insane person be kept in the city his friends can visit him or he can go home to visit his family at a trifling expense. If he be sent to a State hospital the cost of such a visit will be considerable, from $0.88 to $2.00 in railway fares for the round trip, besides the loss of wages to the visitor for the time spent on the journey.

If each insane person belonging in Boston and now in the State hospitals were to receive one visit a month from his friends in the city — certainly not an extravagant allowance — they would pay in railway fares, as the patients were distributed on the 30th of September, 1889, $18,466.56 a year, and, assuming that they lost half a day's pay for each visit at a rate of $1.50 a day, they would lose $12,280 a year, a total tax of $30,746.56, which the city imposes upon its poorer citizens for the privilege of visiting their insane friends once a month.[a] It is no wonder that requests for transfers from the State hospitals to Boston are constantly made — requests which, unfortunately, we are compelled to refuse. One or two letters out of many will show the injustice and hardship of the present system.

"I respectfully petition for the transfer of my father from the insane asylum at Taunton to the Boston Insane Hospital for the following reasons: My father is totally blind; my mother and two brothers have died within the past four years, leaving my father and myself the only living members of our family, without relatives in this country. I am in straitened circumstances, barely able to support myself [she earned five to six dollars a week] and cannot visit my father on account of the expense incurred by loss of day's work ($0.50) and railroad fare ($1.70), although my father is continually asking for me, and the resident physician has informed my friends that it would be a great blessing and also it would benefit his health if I could visit him quite often."

In another case a physician writes: "The daughter of the patient earns $3.50 per week, works steadily and is a well-behaved woman. She visited her mother every week at Austin Farm. Now she cannot afford to go to Worcester to see her mother, as it would cost $2.00 for each trip."

It is hardly necessary to say anything of the impor-

[a] If weekly visits were made, the cost would be $132,692.16.

tance of visits to the insane by their friends. In rare instances restrictions may be necessary, but as a rule in the curable cases the visits of friends keep the patient in touch with the world and encourage him in the progress toward recovery. while occasional visits to his home and trial visits during convalescence do much toward hastening that recovery. Even in the chronic and incurable cases visits do much toward alleviating their unfortunate condition. To the friends, afflicted by the illness of those dear to them, visiting proves a solace. To the hospital itself visiting is of great benefit, as the familiarity with the institution does away with much of the old dread and prejudice so disadvantageous to the hospital, and the greater publicity is a check upon abuses. The insane are neither paupers nor criminals, but sick persons, who should have all the help possible to relieve their condition.

Of course the grave objection to adopting this policy is the cost. To construct a proper hospital and to purchase the additional land required would cost about $1,500,000, assuming that the cost of buildings would amount to $1,000 a bed. That is equivalent to an annual appropriation of $30,000 a year for the fifty years that the city did nothing. The city now pays over $300,000 a year for the care of its insane. If they were all in the Boston Insane Hospital we believe that we could care for them at a considerable saving, perhaps $50,000 per annum, the interest on two-thirds of $1,500,000. The saving to the poor would pay the interest on the rest, and the city would then give equal justice to all.

The Boston Insane Hospital is favorably situated, and there is enough unoccupied land about it to provide for the development of a large hospital. Its close proximity to the medical schools, laboratories and hospitals of the city affords special opportunities. With the erection of new and suitable buildings special provision can be made for acute cases, and its situation in the city would render possible the appointment of a regular visiting staff for such cases. The surroundings are such that it will be forever isolated, yet readily accessible, and the wisest solution of the problem of proper provision for the city's insane is the development of that institution into a modern hospital.

THE WORK OF THE TRUSTEES OF THE BOSTON INSANE HOSPITAL, AND THEIR PLANS FOR ITS FUTURE DEVELOPMENT.[1]

BY HENRY C. BALDWIN, M.D., BOSTON,
Chairman of the Board of Trustees.

By the Legislature of 1897 it was enacted that the Insane Hospital Department of the City of Boston should be created a department of said city, to be under the charge of a board of seven trustees, at least two of whom shall always be women. This board of trustees were to have the general care and control of the Boston Insane Hospital established in 1839, and all the hospitals that said city has established and may hereafter establish for the care and treatment of the insane. Said trustees were to have all the powers relating to the insane and the institutions in which they were confined conferred by the statutes of the Commonwealth upon the Institutions Commissioner of the City of Boston.

[1] Read before the Boston Society for Medical Improvement, January 23, 1900.

In accordance with this act, the trustees began their work in June, 1897. There were over 1,500 insane placed under their care, over 1,000 of whom had to be boarded in State institutions by the failure of Boston to provide suitable hospital accommodations at home for her insane citizens. Five hundred patients were cared for at the Boston Insane Hospital at Dorchester, which then consisted of two separate institutions.

The first act of the trustees after organizing was to adopt rules and regulations for the government of the hospital. These rules and regulations, which were the result of careful study of the rules and regulations of other hospitals, clearly defined the duties of the trustees and of the superintendents, and by these rules the superintendents were made the responsible heads of their institutions. No alteration or amendment of these rules could be made without the vote of five of the trustees, which establishes their permanency.

The trustees entered upon their duties with no traditions to guide and assist them, and to their wisdom in thus adopting at the start a carefully considered set of rules may be ascribed the fact that there has been harmony in the board as well as freedom of action to the hospital superintendents.

Boston in the early days removed her insane from jails and cared for them properly. The munificence of the city in establishing a model city hospital is well known. It is, therefore, remarkable that the trustees found not only that suitable provision had not been made for over 1,000 insane citizens, but that the general conditions of the buildings of the hospital erected between 1892 and 1894 were below the standard of modern attainment in similar institutions. The old wooden almshouse, in which were 130 women, was unfitted for its purpose and condemned as a fire-trap by the State Board of Insanity in 1898. This building, which had been considered unsuitable and unsafe by the trustees, was at once emptied of patients, and has been converted into an administration and domestic building.

These buildings were lighted by gasolene — both unsafe and unsatisfactory. The water service in case of fire was inadequate. A water service as approved by the Fire Commissioner was established last year, and an electric-light plant is now being installed at the hospital.

Under former management by officials whose terms of office were short and depended upon politics, the needs of the insane were not carefully studied, and no fixed plan of development of the hospital attempted.

The trustees early in their work agreed that the hospital should be used for the acute and recent cases and for the infirm. Formerly the hospital had become largely filled with chronic cases, so that the recent cases had to be sent to State hospitals at a distance. This policy of receiving the recent cases and transferring chronic cases to State hospitals has been steadfastly maintained, though it does not probably receive the approval of the relatives and friends of the chronic insane. Three hundred and fifty-six cases were admitted the past year to the hospital, 110 of whom were discharged recovered or improved. It costs more and is more difficult to care for this class of patients than the chronic insane.

For administrative and economic purposes the two hospitals have been consolidated and run as one institution. A better classification of patients was obtained by making the hospital at Austin Farm a de-

partment for women and the hospital at Pierce Farm a department for men. The names Austin and Pierce Farms have been abolished, being meaningless, and the Department for Women and Department for Men substituted. Before this change was made, the wards for the quiet and convalescent patients were directly over the wards for excited and noisy patients.

GENERAL STATISTICS FOR THE YEAR ENDING DECEMBER 31, 1899.

	Males.	*Females.*	*Total.*
Patients in hospital, December 31, 1898	320	252	572
Admitted within the year	150	206	356
Emergency	20	11	31
Voluntary	1	4	5
Committed	129	191	320
Whole number of cases	470	458	928
Discharged within the year	223	209	432
Transferred to State hospitals or asylums	106	72	178
Recovered	19	35	54
Much improved		18	18
Improved	23	15	38
Not improved	30	22	52
Death	42	44	86
Not insane	3	3	
Patients remaining in hospital, December 31, 1899	247	249	496
Supported wholly by the city	209	196	405
Supported in part by the city	26	29	55
Supported as private patients[1]	12	24	36
Number of different persons	467	449	916
Number of different persons admitted	148	204	352
Number of different persons recovered	19	35	54
Daily average	255.32	247.21	502.53

A consulting staff has been appointed, and, at the Women's Department a training school for nurses has been established, which we hope will result in more interested and intelligent care of the patients.

The trustees believe it is for the good of the patients to be employed, and have co-operated with the superintendent and associate superintendent, who have accomplished much in this direction. Our products from the farm the past year have been over $16,000, and the work has been largely done by patients.

The situation of the Boston Insane Hospital is the best that could be found for such an institution. It is very accessible. Franklin Field, Franklin Park, and a large tract of land forever reserved from buildings, namely, Forest Hills Cemetery and Mt. Hope Cemetery, partially surround the grounds, and ensure large breathing-spaces and freedom from the noises and discomforts of a closely populated district. These open spaces, with the land already owned and land desired, make an aggregate area of 1,000 acres. The city engineer and a landscape gardener were employed to make plans of the land to determine if it were available for building sites, for exercise grounds for patients and for tillage, and from these plans sketches have been made for the further development of the hospital. These sketches were submitted to a committee of eminent experts in the administration of hospitals for the insane, who visited the institution and inspected the grounds. This committee approved of the location of the hospital and the plans submitted for its development.

The city now owns at Dorchester 132 acres of land, at cost of $127,000; buildings and furnishings (capacity 500 patients), $732,900, making a total of $859,900. Self-preservation demands that the balance of the land in the square, about 150 acres, should be acquired, and with this additional land a metropolitan hospital can be built. The detached plan of building allows the gradual growth of the institution. It enables the trustees to know what is most needed, and the burden of the cost is distributed through a number of years. While the land may cost more, the cost of the buildings will be practically the same whether built in Boston or in some remote rural district.

Within a radius of ten miles of the State House is a population of 1,000,000; the population of the State is but 2,500,000. Such a district should have a suitable hospital nearer than twenty miles distant.

The estimated capacity for the proposed hospital is 1,500. If it were found unwise to increase the number above 1,000, it is possible to follow the plan of the trustees of the School for Feeble-Minded patients, which has been endorsed by the State Board of Insanity, and establish a colony of trusty working patients on a farm lying on the same line of railroad.

In conclusion the trustees ask your co-operation in their endeavors to secure appropriations for the development of the hospital. In 1898 the needs of the improvements for the South Terminal were considered more important than the needs of the insane. In 1899 the act of Legislature appropriating $200,000 from the city treasury for the Malden bridge took the money which the trustees had reason to expect would be given for hospital development. A bill will be presented to the Legislature this year for permission to take the land required by right of eminent domain. Plans are being prepared for a new building that will accommodate 200 patients, and these plans with specifications will be presented to the City Council. A yearly appropriation of $200,000 for the next few years will enable the city to establish a model insane hospital.

[1] All who pay over $3.50 per week.

Medical Progress.

PROGRESS IN PUBLIC HYGIENE.

BY SAMUEL W. ABBOTT, M.D., BOSTON.

(Continued from No. 14, p. 357.)

"Public money is never more advantageously spent than in promoting and preserving the public health, an inestimable asset of the Commonwealth." — SIR WALTER FOSTER, M.P., in an address at the opening of a new isolation hospital at Enfield, Eng., in February, 1900.

FOOD AND DRUG INSPECTION.

Preservatives.

DR. ALFRED HILL,[25] Medical Officer of Health of Birmingham, in the examination of 2,300 samples of food, found preservatives in 460, or 20 per cent., the substances employed being chiefly boric and salicylic acids and formaldehyde. Boric acid was found in butter, oleo, bacon, sausages, and other animal foods. In butter the quantity varied from seven to 84 grains per pound. He also found it in five per cent. of 1,360 samples of milk, in quantities of three to 130 grains per gallon.

The Society of Medical Officers of Health, after listening to Dr. Hill's paper, adopted the following resolutions: "That the Society strongly disapproves the practice of adding preservative chemicals to milk or other foods. That if preservatives are added to any food, a full disclosure as to their nature and amounts, should be made to the purchaser."

On the other hand, Rideal and Foulerton, in the same journal, present a series of experiments on animals and food substances, with the following conclu-

[25] Public Health, May, 1889, p. 527.

sions: "(1) Boric acid (1–2,000) and formaldehyde (1–50,000), are effective preservatives of milk for twenty-four hours; (2) these quantities have no appreciable effect upon digestion; (3) these quantities have an appreciable effect upon the digestibility of foods preserved by them; (4) formaldehyde, in the proportion given above, so far as our investigations have extended, does not appear to have any injurious action on animal tissues, or on nutrition."

Dr. Nivens,[26] Medical Officer of Health of Manchester, in a report on food preservatives, quotes E. L. Fleming as follows: "The total annual amount of borax and boric acid used throughout the world for preserving food is about 6,000 tons, of which the United States uses 2,000 tons. The largest amounts we used in curing meat, ham and bacon."[27]

Transmission of Typhoid Fever by Oysters.

For a full discussion of the question of the transmission of the infection of typhoid fever by oysters, see a recent article by Dr. Mosny, who was commissioned to make an inquiry as to the condition of the oyster-beds on the French coast,[28] of a similar character with that which Dr. Bulstrode had prepared for the Local Government Board of England.

Unwholesome Oysters.

A bill was introduced into Parliament[29] (England), in May, 1899, having for its object the following provisions: (1) To provide for the inspection of oyster beds or layings, and for analysis of the water of such places; (2) to prohibit the sale of oysters from unhealthy places, except after they have been deposited for ten days in some other and approved places; (3) to prevent the importation of oysters from unhealthy places.

The Standard of Pure Milk in England.[30]

There is no legal standard of milk in England. Different authorities adopt standards of their own, according to their several opinions upon the subject. A circular letter was recently addressed to different local authorities in the metropolitan districts, asking for information as to the standards employed by their analysts, with the following result: The Society of Public Analysts recommend 8.5 per cent. of non-fatty solids, and three per cent. of fat. The Somerset House Laboratory employs the same. The analysts of thirteen metropolitan districts also employ this same standard of 8.5 per cent. non-fatty solids and three per cent. fat, while thirteen other districts employ a lower standard, namely 8.5 per cent. non-fatty solids, and 2.75 per cent. fat. The compiler of these figures adds: "So long as public analysts act in this fashion, so long will the expression 'analysts differ' appear in the public press, thereby causing not only harm to the individuals immediately concerned, but incalculable injury to the analytical profession generally."

Danger from the Use of Milk.

Some valuable experiments have been made at the Storrs Agricultural Experiment Station of Connecticut, which are published in the eleventh annual report of that institution. Experiments were made by feeding eight calves with milk from tuberculous cows, and that without infecting the former. The report closed with the following deductions: "We know comparatively little regarding the conditions which favor the spread and development of tuberculosis among animals or man. Most of all are we lacking in a definite knowledge of the dangers of this disease to mankind from the bovine race. Many have claimed that the danger to mankind from the spread of the disease through the milk supply is very great. It has generally been thought that one great cause for the spread of the disease among our herds is the feeding of the milk of tuberculous cows to calves. The experiments during the past two years at this station do not substantiate this view. It must be borne in mind, however, that the number of experiments is comparatively few, and that the cows whose milk was used were probably in the earlier stages of the disease. These facts have been carefully considered, and it is, of course, unwise to attempt to draw any definite conclusions from the work, but the following deductions seem warranted:

(1) Bovine tuberculosis is usually a disease of slow development, its progress depending quite largely upon the general vigor of the animal and its power to resist the action of the germs. In the nearly two years and a half that the tuberculous cows have been at the station, only one secondary case has appeared, and this was discovered about six months after the feeding period with milk had ended.

(2) In the experiments here reported eight calves have been fed upon the milk of tuberculous cows for periods varying from three months to sixteen months without developing the disease.

(3) The results of these experiments coincide with the general results of our own observations, and indicate that the danger from the spread of tuberculosis through the milk of cows to man or to other animals is not so great as has generally been supposed. In the earlier stages of the disease, and at all times when the udder is not affected, the danger from the use of the milk is quite limited. Great stress, however, should be laid on the danger of using milk from cows which show any symptoms of udder affection.

The Bacteriological Examination of Milk from Tuberculous Animals.[31]

Thirty-three samples were examined, all from cows which had reacted with the tuberculin test. The chemical examination revealed no striking peculiarities excepting a somewhat abnormal excess of mineral matter. All of the samples were submitted to careful microscopic examination, after centrifugalizing the milk, the method being first tested by examining material known to contain the tubercle bacillus, no difficulty being experienced in recognizing it in the test samples. Out of all the samples from the reacting animals, the writer says, "I have not been able to find the tubercle bacillus in a single sample sent me for examination." Other methods were also tried, an attempt being made to cultivate the bacteria in beef broth, with the same result. Still further methods were adopted, but no tubercle bacillus was found. The total solids in the normal milk ranged from 16

[26] British Food Journal, February, 1899.
[27] See also Journal of Experimental Medicine, vol. iv, No. 1, p. 47, article by Bliss and Mosny, on the Action of Formaldehyde.
[28] Des Maladies Provoquées par l'Ingestion des Mollusques, M. le Dr. Mosny. Revue d'Hygiène, vol. xxi, p. 1,05; vol. xxii, p. 1.
[29] Public Health, July, 1899, p. 682.
[30] The British Food Journal, December, 1899, p. 355.
[31] Journal of the British Farmers' Dairy Association, quoted in the British Food Journal, November, 1899, p. 331.

per cent. to 12.01 per cent., and the mineral matter from .86 per cent. to .66 per cent.

Dr. Anningson [32] makes the following practical suggestions in regard to the best methods of securing the purity of the milk supply:

(1) Eradicate tuberculosis from stock by "breeding it out" as recommended by Professor Bang, namely: (*a*) Testing all breeding stock with tuberculin; (*b*) separating the diseased from the healthy; (*c*) placing the healthy in a clean, healthy, well ventilated and lighted shed; (*d*) placing the diseased in a disinfected, clean and well-ventilated, lighted shed; (*e*) branding all reacting animals on the horn or hoof so that they can be readily identified and continuously isolated; (*f*) keeping separate utensils for their use and even separate attendants; (*g*) slaughtering at once all those that show signs of advanced disease; (*h*) fattening and slaughtering of, as soon as possible, all those that show disease of the udder or advanced tuberculosis, and on no account allow the milk to be consumed; (*i*) removal of all calves born of tuberculous cows away from their parents as soon as born, hindrance to their sucking their dams, and rearing them on healthy cows' milk or sterilized milk; (*j*) isolation and testing all fresh cows before allowing them to mix with the others; (*k*) testing the calf as soon as possible, say at one or two months old, with tuberculin; (*l*) retesting the healthy stock twice during the year, to be sure they are remaining healthy.

(2) Protection of milk supply by (*a*) compulsory testing of all milch cows used for providing milk for sale; branding all reacting cows; (*b*) experts to test the milk from reacting cows both microscopically and by feeding guinea-pigs, and when found to be virulent, condemn the cow for milking purposes and mark her with a special brand; (*c*) sterilization of milk obtained from reacting animals before retailing it to the public, and heating the cream to 85° F. before churning it into butter; (*d*) prohibition of the use of the milk of cows with diseased udders for food; (*e*) periodical examination of the cows and sheds by veterinary experts; (*f*) compulsory notification of any disease of the udders of milch cows and inspection of the same by veterinary inspector; (*g*) exclusion of persons in an infectious state (including phthisical persons) from all kinds of dairy employment.

Is Sorrel a Poison?

Eichhart [33] reports the case of a boy of twelve, who was taken violently ill after eating sorrel. He had acute hemorrhagic nephritis, with coma, convulsions and death. Oxalate crystals were not found in the urine or in the kidneys. Lewin [34] regards this case simply as a *post hoc*, and not one in which there was special proof of poisonous action, since the urine on the ninth day contained a quantity of albumin, and grave symptoms of renal obstruction were present. He does not think the poison could change the structure of the kidneys so rapidly, and hence argues for the innocuousness of the sorrel.

The Detection of Corn Starch in Wheat Flour.

Baumann [35] proposes the following method for the detection of corn-starch in wheat flour, the method being dependent upon the rate of swelling of the starch grains under the following treatment: A sample of the suspected flour is placed in a glass with 10 cubic centimetres of a 1.8-per-cent. solution of potash. This is shaken up for two minutes to prevent the starch from settling. The time (two minutes) and the exact amount of potash solution should be carefully noted. Then four or five drops of hydrochloric acid, 25 per cent., is added and shaken vigorously. The reaction should be alkaline. A drop is then placed under the microscope. The wheat starch appears wholly swollen and the corn starch not affected. Quantities as small as one or two per cent. are easily detected.

By comparing samples with mixtures of known quantities, a fair quantitative analysis may thus be made. A similar proceeding can be conducted with rye meal.

Supervision of Ice-Cream Manufacture.[36]

The British Parliament passed the following act at a recent session:

32. (1) Any person being a manufacturer of or merchant or dealer in ice-creams or other similar commodity who, within the city (Liverpool), (*a*) causes or permits ice-creams or any similar commodity to be manufactured, sold or stored in any cellar or room in which there is an inlet or opening to the drain; or (*b*) in the manufacture, sale or storage of any such commodity does any act or thing likely to expose such commodity to infection or contamination, or omits to take any proper precaution for the due protection of such commodity from infection or contamination; or (*c*) omits on the outbreak of any infectious or contagious diseases amongst the persons employed in his business to give notice thereof to the medical officer of health for the city, — shall be liable for every such offence on summary conviction to a penalty not exceeding forty shillings.

The Typhoid Bacillus in Milk and Butter.

Experiments conducted by Bolling and Field [37] showed that the typhoid bacillus does not multiply in butter when the latter is free from buttermilk. The presence of the bacillus in the butter can be demonstrated for ten days. When placed in milk the bacilli were not destroyed by other bacteria already present, and could be demonstrated in the milk for three or four months.

The Tubercle Bacillus in Oleomargarine and Butter.

Morgenroth [38] states that "genuine tubercle bacilli are found in margarine and not infrequently. Hence this food should be subjected to careful inspection before it is offered for sale." Rabinowitsch [39] presents further observations showing the presence of tubercle bacilli in market butter in Berlin. Two samples out of 15 collected contained living virulent tubercle bacilli.[40] Obermuller [41] found tubercle bacilli in specimens of German butter.

WATER SUPPLY AND SEWERAGE.

Filtration of Surface Water in German Cities.

Pannwitz [42] contributes a paper upon this subject in which he refers to certain rules which had been laid down by Koch and Piefke. They proposed a rate of filtration limited to 100 cubic decimetres per hour, per

[32] Notes on Guarantees of the Purity of the Milk Supply, by Bushnell Anningson, M.D. Journal of the Sanitary Institute, xx, 4, January, 1900, p. 555.
[33] Deutsche med. Woch., 1899, 28.
[34] Loc. cit., 30.
[35] Zeitschrift Untersuch. d. Nahr. u. Genussmittel, 1899, p. 27.
[36] Parliamentary Powers of the Sanitary Supervision and Control of Ice-Cream Manufacture, by E. P. Manby, M.D., Liverpool. Journal of Sanitary Institute, January, 1900, p. 582.
[37] Centralblatt f. Bakt. ii, 4, 24, p. 161.
[38] Hyg. Rundschau, May 15, 1899, p. 481.
[39] Deutsche med. Woch. No. 1, 1899.
[40] Hyg. Rundschau, viii, 22, 1898; ix, 2, 1899.
[41] See also Rev. d'Hygiène, pp. 78, 575, 1898, and Zeitschrift f. Hygiene, 31, p. 137, 1899.
[42] Arbeiten a. d. kaiserlich. Gesundheitsamtes, 14, p. 153.

square metre. The depth of the sand should not be less than 30 centimetres, and special attention should be given to cleansing of the sand. The first effluent of a recently cleansed basin should be rejected, and not used for drinking.

Bacteriological examinations should be conducted daily. When the water of a filter contains more than 100 bacteria per cubic centimetre it should be rejected as drinking water. A description of the filtration plants of twenty-six German cities is presented, with the essential statistics of each. A series of diagrams is also given, in which the results obtained in each place may be compared with those of others.

Treatment of the Crude Sewage of London.

Clowes and Houston [42] reported to the London County Council the following conclusions: "The above considerations show that neither on chemic nor possibly on bacteriologic grounds can any serious objections be raised to the introduction of the effluents from the coke beds into a portion of the River Thames, which is cut off by locks from the intakes of the water companies, and the water from which is not employed for drinking purposes and cannot be used for drinking on account of its 'brackish' nature.

"The effluents certainly will not cause any deposit upon the river bed, and will even tend to render the turbid water of the lower river more clear and transparent. At the same time the liquid discharged from the outfall into the river will be sweet and entirely free from smell. Further, it will carry into the river the bacteria necessary for completing its own purification in contact with the aërated river water, and under no conditions can it therefore become foul after it has mingled with the stream. The effluent will in no way interfere with fish-life in the stream."

Bacteriological Examination of Chicago Sewage.

Dr. Gehrmann [43] director of the Municipal Laboratory of Chicago, reviews the results of Klein's examinations of London sewage, including his discovery of the bacillus enteriditis sporogenes, and sought for its presence in the sewage of Chicago. He examined 42 specimens of sewage, also 130 samples of the city water supply and some samples of milk to which river water had been added. From these examinations he concludes "that bacteria of the species described by Klein, or very similar to them, are practically always present in the sewage of Chicago."

He states further, that "it would not appear that search for Klein's bacillus is of great value in determining sewage pollution — at least, not from the Chicago water supply. The results have practically all been negative. This has been true even during a recent period of pollution when bacillus coli communis was abundantly demonstrated.

Effect of Sewage Pollution upon the River Simmat, Switzerland.

Ascher [44] presents the results of a series of observations made at Arc and at Wettingen, two points on the river Simmat, below Zurich. Samples of water were taken simultaneously at these two points. As a result of these observations the author concludes, with Schlatter, that the so-called bacterial self-purifying process was due mainly to the action of sedimentation.

Provision for Storm Water in Sewage Purification Works.

Engineer Martin [47] reaches the following conclusions:

(1) That no definite rule as to the proportion of storm water to be dealt with can be applicable in all cases.

(2) That the first scourings of the sewers and surfaces around should pass into the ordinary works before any overflow is allowed to take place.

(3) That the works provided for dealing with storm water should always be ready to receive it at any hour of the day or night.

(4) That reasonable provision may be made for dealing with storm water without adding unduly to the cost of the works.

(*To be continued.*)

[42] Bacterial Treatment of Crude Sewage and Experimental Treatment of London Crude Sewage in the Coke Beds at Crossness, London, 1899.

[43] Monthly Bulletin of Chicago Health Department, July, 1899.

[44] Zeits. f. Hyg. u. Infect. Krankh., xxxiii, 1, p. 33, 1899.

[47] The Provision for Storm Water in Sewage Purification Works, by A. L. Martin, C.E. Journal Sanitary Institute, January, 1900, p. 624.

Reports of Societies.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

A. K. STONE, M.D., SECRETARY.

Regular meeting, Monday, January 22, 1900, Dr. E. H. Bradford in the chair.

Dr. P. C. Knapp read a paper on

THE PROBLEM OF BOSTON'S INSANE.[1]

Dr. H. C. Baldwin gave a report of the

WORK OF THE TRUSTEES OF THE BOSTON INSANE HOSPITAL, AND THEIR PLANS FOR ITS FUTURE DEVELOPMENT.[2]

Dr. Howard: I came in rather late. What I have to say, if I have anything, I prefer to say after hearing some of the others who know more about the institution. I have visited Austin and Pierce Farms a great many times. I thoroughly believe in the institution, thoroughly believe they ought to have this land they ask for.

Dr. Channing: I think the city ought to be congratulated upon having some trustees who are willing to take hold of such an institution as this and try to put it on its feet. I am sure all the members of this Society will endorse these plans that have been presented by Dr. Baldwin. I think that there is no doubt that the Boston Hospital for the Insane should take care of all its city cases. This is the practice in other places, particularly in New York. They have, as you know, now in New York all the insane of the whole State under State care, which was formerly not the case. Within two or three years the insane in the hospitals of Brooklyn and New York have been combined together in one institution, which is called the Manhattan Hospital, and in their last report, which I got only a day or two ago, they had 6,544 cases. They are rather behindhand in some things in the New York public institutions, and among others is in this department of the insane, and the report is two years old. I have no doubt by this time there may be 7,000 altogether in the Manhattan Hospital, and

[1] See page 377 of the Journal.

[2] See page 379 of the Journal.

the same questions that have come up here have come up there, and the same arguments are good in both cases. In this report, for instance, especial mention is made of the difficulty formerly of visiting patients who were at a distance, and of the great convenience it is now to have the patients where their friends can easily reach them, but the city is so large that they wish to extend the buildings still more, so that it may be more easy for the friends to get to the hospital.

Another point which has not been dwelt on to-night, but is an important one, is getting patients easily to the hospital. That is one special reason why Boston should take care of as many local cases as she can, and in New York they are trying to have the cases brought directly from their homes instead of going by the way of the pavilion at the Bellevue Hospital.

Their idea is to have an ambulance to bring patients, unless there is some special reason because of their violence, to the hospital from their homes. As the members of the Society know, several of us have advocated having some reception house or some sort of small hospital in the centre of the city, so that cases of insanity should be sent immediately to it instead of going to the police stations and being held there two or three days; and if it is possible with the extension of this new hospital to take cases immediately, and have it large enough to take cases temporarily that may later go to State hospitals, in that way it can help to serve the public and be doing even more good than it would otherwise. I trust this Society will appoint a committee, if necessary, to back up the trustees in what they are trying to do, and I hope it will as a whole recommend that all of the city insane shall be taken care of in the city hospital as soon as it is expedient.

DR. PRINCE: I did not come to say anything, but to listen, but as you have called on me I will say a word or two. I think that all of us who have any familiarity with the history of this insane hospital would corroborate a very large part of what the readers have said regarding it. I think it is perfectly true, as Dr. Knapp has said, that the whole history of the policy of the city of Boston in the conduct of this hospital shows it to have been one without any adequate conception of the needs or wants of a hospital of this kind. There never has been up to the present time any comprehensive plan. This in the past was not, I wish to say, because of any lack of any really honest interest in the hospital, — I refer to the old days when hospitals were under the care of commissioners of public institutions, — but because of the training of the men responsible for its management; they did not comprehend the problems with which they had to deal. I remember being taken through the hospital by the chairman of the commission, and having the hospital pointed out to me with great pride as a model of everything a hospital could be. I shall never forget how really interested he was, what a splendid hospital he thought he had, and I do not believe there was ever a man more surprised than he when he found that we who were inspecting the institution did not take the same view he did. I do wish to say he was enthusiastic, and I think he gave his best endeavors to the city, but he did not have, nor did any of the commissioners at the time have, any true conception of the problem of taking care of the insane.

This question of whether or not Boston should take care of all its insane is not a new question. It has been agitated a long time. It was advocated at the time to which I have just referred with a great deal of earnestness by the then commission, especially by its chairman, who urged over and over again that the city should take care of its insane, and he based his argument on two grounds: (1) That the city could take care of the insane at a considerably reduced cost over what the State charged, and (2) also for the reason Dr. Knapp has advanced to-night, that it was a distinct hardship to the citizens of Boston who had relatives or friends in other asylums of the State to have to go so far and pay so much money. He urged it with a great deal of enthusiasm, but at that time I regret to say that his idea of taking care of the insane was limited principally to dollars and cents, to feeding and lodging, and that could be done in the way it was done cheaper than the State could do it. Those of us who looked into this question at that time felt when we came to make our recommendations to the Mayor that whatever might be the merits of the case, we did not think the city gave that care to the insane as compared with other institutions that warranted us in advising that the rest of the insane should be placed under the care of the city. Now, however, under the good government of the present superintendent and trustees, it seems we have a different order of affairs, and the question has arisen whether the time has come for us to recommend the enlargement of the hospital.

I do wish to say that I think there is another side of the question which should be carefully considered, because it is not entirely a question of the care of the insane. I think we all feel, or ought to feel, the greatest sympathy and interest for the welfare of the insane. I say "ought," for I regret to say there is a decided apathy on the part of the public in regard to the care of these unfortunates. Large numbers of good people shrink from the subject and it is only a few that really will interest themselves in the question. Now what I was saying is that, however much we who know about it feel that everything humanity dictates should be done, there is another side of the question: we ought to consider the burden of those who have to pay the expenses. I think that must be considered if we are practical men. The city pays one-third of the cost of construction of every insane hospital in the State. Now on the face of it, unless it is absolutely necessary, it does seem rather hard that the taxpayers should be called upon not only to pay one-third of the cost of the construction of all the insane hospitals of the State, but to build another hospital at its own expense for the sake of its own insane. It may be necessary, but it does seem a hardship, and before we undertake that tremendous burden we ought to consider it pretty carefully. To build a hospital for 1,000 patients would mean at least $1,000,000, so that it is a pretty big undertaking.

Now, equity and good business management require that inasmuch as Boston has paid, and in future will continue to pay, one-third of the cost of construction of the hospitals for the care of the State's insane, it is only right and proper that either the State should pay its proportional cost of the construction of Boston's hospital, or should refund to the taxpayers of Boston the amount which they have contributed in the past to the State for the construction of hospitals, and

further, that Boston, if it takes care of all of its own insane, should be relieved of paying any part of the cost of future State hospitals. Can any one, though, be so optimistic as to believe that there is any likelihood whatever of the State reimbursing the city of Boston in this way? There is not the slightest likelihood of any such legislation being passed. This being the case, the expenditure of $1,000,000 by the city of Boston for the enlargement of its hospital cannot be justified unless it can be shown that the hardships of the present system are so severe as to call for this financial sacrifice on the part of the taxpayers. I do not say that this financial question should necessarily forbid the city undertaking this great expense, but it should not be undertaken unless it is shown absolutely necessary on humanitarian grounds. Now, while I think it is desirable that the Boston Insane Hospital should be near the city, I think it is doubtful whether it is necessary that all the city's insane should be cared for by the city for the purpose of having them near their friends, as there is quite a large minority of patients who have no friends, or at least friends who would visit them, and, therefore, who might very properly be taken care of at a distance from the city by the State. Some time ago we tried to obtain some statistical information on this matter, and obtained from the different hospitals of the State and from the City Insane Hospital statistics giving the number of visits made to the Boston patients during the course of a year by their friends. The information obtained was, it is true, not quite satisfactory, but there was sufficient evidence to show that there is a large minority of patients in all the hospitals, including the Boston hospital, who are never visited, or so rarely that their being far removed from the city cannot be a hardship. So that, under any considerations, there does not seem to be any necessity that the hospital should be so large that all the insane in the city should be housed.

Looking at the question, then, from these practical points of view, I do not believe that the taxpayers of Boston should be asked to pay for the construction of its own hospital, without some equitable adjustment between the city and the State of the financial cost. Furthermore, another and serious objection to the city's undertaking this expense at present is that the plan now under consideration, of having the State take care of all the insane of the State, including those of Boston, is likely to be carried through. This unquestionably is the most desirable plan, and one that has been advocated by many of the medical societies. If this plan should be carried out, the State undoubtedly would locate a large hospital in the neighborhood of Boston, in accordance with the plan which has been so often suggested. How then could we recommend that the City Government shall appropriate this large sum of money with the expectation, or possibility at least, that the State will take over the hospital after construction, and without any guarantee beforehand that the city shall be reimbursed for its outlay? To do this would not be good business management, and I think no city government would be justified in such a course of action. There are distinct advantages in having all the insane of the State brought under one central State management.

Undoubtedly, with our present Board of Trustees, the advantages would not be so great at the present time, but no one can tell how long we shall have as efficient a Board as at present, and if the Board should deteriorate it is plain that it would be a distinct advantage to have the city hospital under the control of the State Board, so that the same methods would be applied in this hospital as in all the other hospitals of the State. This would solve the financial problem. There is, as I have said, no reason why the State should not take the present Boston hospital and enlarge it sufficiently, provided sufficient land can be obtained, to care for the greater part of Boston's insane. In this way all the advantages of having a local hospital would be given under State management.

I think this question should be looked at in all its details; looked at from the point of view of the taxpayer as well as from the point of view of the patients, their friends, and the physicians. Finally, speaking for myself, I should not be willing to advise the city of Boston to provide for all its own insane, and at the same time pay one-third of the construction of all the insane hospitals of the State, including those to be built in future.

Dr. Baldwin: I should like to say that the Board of Trustees are anxious for State care, and so far as I know, there is not only no opposition on the part of the city officials, but a unanimity of opinion in favor of State care.

Dr. Lane: I did not come prepared to make any special remarks. I would like to say one thing. Perhaps the most frequent criticism of this hospital has been its per-capita cost. I agree with the speakers that the cost is a very vital thing, because in a large hospital like this wise management is very necessary, and we should never become careless of the expense, and it is very easy indeed in managing a large institution like this to waste a good many thousand dollars through carelessness, but our per-capita must, I think, always be high with 500 patients, and it is higher than the State hospitals with 700 to 1,000 patients, with a building all under one roof and one central administration of all. Our per-capita cost will vary from $4.30 to $4.70 the last few years, and I am frank to tell you all that we do not give for our $4.60 quite as much as we get out of the State for $3.25. Our Boston finances cannot be compared with those of State hospitals, as the system of accounts is so different. In our Boston hospital we have only one appropriation. From that it is our duty to spend as wisely as we can and get what we can. It has always been the custom in the city to make little repairs out of the current expenses. Perhaps there is damage done by a storm. These expenses have always been paid out of our appropriation. We are not given, as the State is given, so much money for every patient we have in the house, but we are given about so much money and have that money to expend, and that always includes items amounting to twenty to twenty-five or thirty cents per capita, which in all our reports is charged to current expenses, which is not included in other hospitals. The New York hospitals have twelve items scheduled. I find almost all of those items larger than in our hospital, yet at the end of the year our total per-capita expense may be little above theirs. Fuel must always be higher with us. We have to haul all our coal from the shore, and it costs our hospital nearly a dollar a ton more than the hospitals in the interior of the State. Again, we have two plants a little apart, two kitchens, two boiler-rooms, and that means a

good deal more. I have felt this a long time, and I think the members of the Society should appreciate that fact, that with our two plants our total per-capita will be more, but if the State Board of Insanity should request a uniform financial report it could be shown that in all items except fuel we would not be much above the State hospitals. I believe our present per-capita is lower, however, than it will be in the future, as I believe the standard of living in Massachusetts hospitals will be raised.

Dr. Noyes: I don't think I have anything to add to what Dr. Lane has said from the point of view of the internal administration of the hospital. He has been there so much longer than I, and is so much more familiar with the details of it, he is able to present it to you very clearly. So far as Dr. Prince's criticisms go, we are all looking forward anxiously to the time when we can be under the general control of the State, and feel we shall have no permanent peace or satisfactory hope of development until we have that guarantee for the future primarily regarding the quality of the trustees that are to be appointed. The State hospitals have a very high degree of efficiency in their trustees, and if we hope to have that continued in our own hospital I think we must look forward to the fact of being under the stable government of the State.

Dr. Stedman: I think that the progress which the hospital has made in the last two years of the new régime is remarkable and promises very well for the success of their ambitions for the future. The problem whether it is best to undertake to care for 1,600 patients under advanced methods in the city confines and on 300 acres of land, with all the industries for the chronic class that will be in vogue and are already being adopted elsewhere, is a question which I have not thought over enough to talk satisfactorily about.

Dr. Bullard: It seems to me we should go very slowly in this matter. There are a number of details which should be thoroughly considered and discussed before I certainly should be willing to adopt the views advocated to-day. It seems to me, for one thing, that while the State affords better accommodation at a lower price, and takes better care of its patients, it certainly would be rather unwise to place the patients under a less favorable and more costly administration. If State care is to come, as I hope it may, it seems to me these problems may well be left to the State. The State Board of Insanity have already presented their opinion in favor of State care to the Legislature and it seems to me that any questions of extension such as this proposed should be very thoroughly discussed and considered, and if State care is to come they should be left to the State authorities.

Dr. Baldwin: One point has been brought up in the discussion, namely, per-capita cost. It has sometimes seemed to me that people consider more the question of the per-capita cost than they do the per cent. of cures possible among the insane. The burden of caring for the chronic insane is a very great one, and, of course, the insane of this class should be cared for as cheaply as is possible. In acute cases it has always seemed to me that the question of money should not play so large a part. The average duration of life of a chronic insane person is from twenty to thirty years, and this means an expense of from $3,000 to $4,000 for each person who becomes a chronic case. It seems, therefore, important that everything that would tend to restore mental health and prevent a possible wage-earner from becoming a pauper should be done, even if the per-capita cost were more. I cannot agree with Dr. Bullard in all that he said.

Dr. Knapp: I did not bring in the question of State care at all, because that is entirely foreign to this discussion. The State Board have made their report recommending State care, which our Board of Trustees regard as a very desirable thing, but with the adoption of State care and if the State should take this hospital, there still remains, as I believe, the vital necessity to develop it into a large metropolitan hospital. This necessity is, indeed, still more imperative than if the hospital remained a city institution, because within a radius of twenty miles of the State House is approximately one-half the population of the State. Within a radius of eight miles of the State House there are about 450 insane beside the insane of the city of Boston, in a population of about 1,000,000, making something over 2,000 insane in that radius, and, although within twenty miles there are probably one-half the insane, there is no State hospital in that area. The policy of the State in the past has been to go into the country and buy a piece of land cheap, in the middle of a big plain or on top of a hill, and then to build a hospital at an additional expense for transportation of material and drainage, away from fire departments and from good water supply, and usually at some little place where the train stops every other week, and where you either have to walk three or four miles or hire a private carriage to get from this little station up to the hospital. Thus the State has paid absolutely no regard to the cost of sending patients to the hospital. the cost for the trustees and inspectors to go to the hospital, the cost to the friends visiting the hospital, and the cost of getting the patients away. If State care be instituted there should be a large metropolitan hospital within the city of Boston or close to it, so that it would accommodate a very considerable number of the insane within the ten-mile district. Whether State care be adopted or not, we believe this hospital should be developed. Whether that hospital should be large enough for the whole 2,000 patients or whether it could be made smaller is a question. There are patients who have no friends or whose friends do not come to see them. These can go without hardship to the hospitals somewhere in the country, but there are a large number of patients whose friends do care to come and see them, and it is unjust and a great hardship for the friends to be compelled to pay this additional sum of money simply for the reason that the first cost of the land is a little bit cheaper than to build the hospital in some accessible region.

BOSTON MEDICO-PSYCHOLOGICAL SOCIETY.[1]

J. W. Courtney, M.D., Secretary.

Regular meeting, Thursday, December 21, 1899, Dr. R. T. Edes in the chair.

Dr. Arthur C. Jelly read a paper on

Folie à Deux.[1]

Dr. Blumer: I have under my care at the Butler Hospital a very interesting and remarkable case of

[1] See page 369 of the Journal.

folie à deux in two Irishwomen, mother and daughter, formerly well-to-do, who under the influence of their delusions, have made several trips to Europe and thus impoverished themselves, insomuch that now they are a charge upon the State of Rhode Island. The mother completely dominates the daughter, and the daughter constantly refers to the mother and her opinion in support of her own delusions, and their hallucinations of sight and hearing are almost identical. I was reminded of the case especially when Dr. Jelly spoke of the patient in whose case the ravens played so large a part. In this instance sparrows appear, and their appearance has a significance which is identical in the case of both mother and daughter. These patients, when I first came to Butler Hospital, were in the same ward, were constantly together, and acting and reacting upon each other. They have since been separated, very much to the improvement of their condition.

One fact has struck me in looking over the literature of the subject of communicated insanity, and I am confirmed in the opinion by what the essayist has told us this evening, namely, that these cases occur very largely in this country and in Great Britain among the Irish. My own patients are Irish, and the cases reported in the *Journal of Mental Science* have been inmates of Irish asylums as a rule.

DR. DENISON: I have been quite interested in the paper, and I have recently reported a case at the Connecticut Hospital of Insane, of paranoia, which is quite interesting — a German woman about forty-five years of age. There is no heredity ascertainable, but her parents were not married, lived together without any marriage and whether that indicated any moral degeneracy or was due to circumstances, I cannot ascertain. She came to this country fifteen years ago, and about two and a half years ago became insane, with well marked delusions of persecution, and very soon her husband, about whom we knew little, became infected by precisely the same delusions. Her delusion practically is this: that certain doctors whom she had consulted, never for children, having always employed a midwife and labors always normal, came to the house about midnight or a little thereafter, and gave chloroform and performed some kind of operation on the uterus; as she expressed it, "they moved it round or turned it over," to prevent having any more children. About a year after these delusions, she had a delusion one morning that she felt a sudden bearing-down pain. Soon after that, emptying the bladder, she thought it was clear blood, and she summoned a physician and he stated he could not come that night, would come the next day. About one o'clock this physician, whom she never employed before, came to the house. She could not see him, but heard his voice, felt his hands pressing midway between the axilla and ilium, and he performed some kind of operation on her. She finally, with her husband, visited New York, consulted a well-known specialist there, and he saw at once that they were both insane, advised them to go home, and this woman was taken to the almshouse. Very little is known about the husband, but the probability is that he is a weak man and accepted his delusions through the superior strength of his wife's will, and there is some reason to think that he may recover. When the woman came to an examination, she was very willing to talk, as those cases usually are, and produced various records and notes which she had written, some of which she refused to show even, some of which she allowed me to read, one of which contained a list of the various changes of residence in the last year and a half, six or eight changes, part of the time because she had been troublesome, and part of the time because her husband. While visiting in New York the husband broke out and said they ought to have protection, and the State of Connecticut ought to furnish means for prosecuting her enemies. She shows thus far no evidence of improvement. We do not expect it.

DR. PAGE: There is another very interesting case at the Connecticut Hospital that might be reported in full perhaps, but I can only give a few of the details at this time. Nearly a year ago, a young man and his mother were brought to the hospital at the same time, and both, of course, were insane. As I recall the case, the young man had managed a farm for some time. They had had a good deal of bad luck. Some of the cattle had died. He thought the milch cows dried up too quickly in the season. He was very suspicious of the people about him, different ones, and there happened to be an adopted daughter in the family, a girl we have never seen, but who, judging from the reports, must be weak-minded,— I think she is epileptic, — and as I recall it she had a sort of trance and would give them information when she was in that state about the cause for their trouble, and the young man and his mother believed what the girl told them, and in this way they had some very peculiar and strange ideas, which were very interesting. At length the young man became so much annoyed that one day, when a neighbor whom he believed to be his leading enemy was driving by the house, he ran out with a shotgun and discharged it at him. Fortunately he did not kill the man, but the mother justified the son, and said that he was justified in shooting the man, and accepted all the delusions that the son gave expression to. The mother was never troublesome at the institution. She was trusted very soon after she came there to go about more or less, worked very well and has now been removed, gone home to her sister's. The son will have to remain probably because of his shooting incident, which will necessitate his being kept there. He says now that he made a mistake in trying to kill this man; at the same time he believes that the man was an enemy of his, and has always said that his mother was not insane and ought not to stay in the hospital, and several times appealed to me to have her discharged. The town authorities were not willing to allow her to go back to the home where she had lived, and finally, within ten days, consented to her discharge, provided she would go with her sister, who lives in another town, and she went away with that sister and is probably with her now.

DR. HARRINGTON: One of the cases that might be referred to in this connection is the celebrated case of Freeman, who killed his child. He influenced his wife and brought her over to his beliefs. While we have his case on quite full record at the Danvers Hospital, and while there are references to this influence which he had over his wife, yet the part which his wife figured in it is not reported very definitely, but still it is a matter of somewhat common knowledge with those who knew Mr. Freeman's case at the hospital, about the degree to which he did influence his wife. He had various delusions and hallucinations, believed that he heard the voice of God commanding him to do vari

ous things, and that he heard the voice of God giving him certain tasks to perform as a test, and he and his wife talked these matters all over among themselves, and she was a party to his beliefs. When it came to the final act, the killing of his child, she evidently was wholly in sympathy with his belief. He heard the voice of God, or at least by some means the command came to him, that he was to be put to this test, and he went to the child with this knife, and held it over the child, and his wife stayed by his side and the deed was finally done. That is certainly a very marked instance of this sort of case we are discussing. We have, I think, on record that his wife recovered shortly after, within I think something like a month after he was arrested, and Mr. Freeman finally apparently made a complete recovery himself, and was discharged from the hospital at the end of three years.

Dr. Page: A physician interested in the case at the time he was at Danvers informed me within two years that he had kept track of him and that he had remained perfectly well.

Dr. Bullard: I saw the woman of this T. family of whom Dr. Jelly writes. She gave me a very full history of her troubles and told me about her husband and how he agreed with her thoroughly. I was rather inclined to suppose at that time that she was the stronger character and that she influenced him. He seems to have been a somewhat weak man, and her very definite views and hallucinations had impressed themselves so upon him as to affect him in the way described. I should think that view would be rather substantiated by the fact that the man recovered earlier than the woman.

Dr. Abbott: There was a rather interesting case under my observation two months ago of a German husband and wife. The husband was rather a neurotic individual, who was also dyspeptic, and he kept having pain after eating certain things. He had the notion, possibly as a result of his dyspepsia, that his food was poisoned, and finally this idea became so strong that he thought he could see the poison in the food he ate. As near as I could elicit from the family and from the patients themselves his wife at first used to say to him: "If you talk like that you will be shut up in an asylum." After a while she too began to believe that there was poison in the food, and finally that she could see it. They kept a little grocery store in one place and they thought many of the groceries they had were poisoned and refused to sell some of them for this reason; many of the things they would not eat. They moved from place to place under the idea that they were persecuted in different ways and that they could both of them detect the individuals who were trying to follow them up. Brought to the hospital, they were separated and not allowed to see one another. For many weeks both maintained with undiminished strength the delusions that the food had been poisoned, that they saw it, that on opening cans of fruit they could see the poison in it, and that the neighbors were trying to poison them and interfere with them. Neither of them had these delusions about the hospital food, but ate it readily, nor were they suspicious of those about them in any way. But both separately maintained these same delusions just as strongly as in the beginning, even after a great many weeks. This is a case of properly so-called *folie à deux*.

Some of the cases reported by Dr. Jelly seem to me coincidences rather than true instances of *folie à deux*, or communicated insanity. That is, it is not uncommon for different members of the same family to have some mental disease, as melancholia or dementia precox; it is mere coincidence if they have their attacks simultaneously, and some copying of the delusions of one by the other would not warrant us in calling them an instance of *folie à deux*. The complete adoption by a person of otherwise sound mind of the delusions of another person not of sound mind seems to me the criterion for the diagnosis of *folie à deux*. In view of our ignorance of the pathology of the psychoses, the recovery of one of the patients need not invalidate the diagnosis; but it only tends to confusion and indefiniteness of conception to class mere coincidences under this head, and we should be careful not to err in this direction.

Dr. Lane: I am interested in this account of these cases. It is rather surprising to me that there seems to be so few of them, because, with our experience that the weaker members of the family believe delusions, it would seem *a priori* there must be many more cases where the weaker members of the family do actually believe the patient's delusions. I do not know that I can recall any more cases. Some of these cases we had at our hospital. I saw the two sisters, the first case reported by the reader, in the morning and advised to have Dr. Jelly see them that afternoon, and they both came to our hospital. The first was melancholy at that time, and the second suffered considerable melancholia and recovered. The younger, a much stronger person mentally, much more decided in her views, with a mind of her own, has apparently degenerated into a chronic delusional state.

Dr. Brackett, who is familiar with the Freeman case, calls my attention to it. Not only was Mrs. Freeman impressed with his views, but quite a little coterie in the same society whom he had impressed his views upon assembled in secret several nights. He believed that the Lord would intervene and not allow the sacrifice to be made, a repetition of the Old Testament history, or if the child was killed it would be resurrected in three days. He not only impressed his wife with that view, but several of the neighbors.

Illustrating the case of delusions being copied, I think it is quite rare. We have seen recently a paranoiac who believes he is God and amuses himself creating worlds, drawing circles on paper, and has so impressed a muscular Christian that he is willing to fight any one who does not believe him. He has taken up the idea that this man is God, and is quite aggressive on the subject.

Dr. Knapp: I confess that I am very skeptical in regard to *folie à deux*. I doubt whether many, if any, of the reported cases can stand the test of close analysis. I think Dr. Jelly has brought out pretty clearly some of the tests which should be applied in order to admit a case into the category of *folie à deux*. Thus, for example, I think that cases of general paralysis occurring in husband and wife, where there is the probability of syphilitic infection in the two cases, should be excluded from such category. Meyer has recently reported the case of a man who was brought in contact with an alcoholic who had the polyneuritic psychosis, and developed similar symptoms, but the first case was himself an alcoholic, and, as we know, the clinical picture of the psychosis of alcoholic neuritis is very characteristic and very much the same. So,

too, in various members of one family who are exposed either to the same toxic influence or who are exposed to the same environment it is not surprising, especially if the family be of unstable equilibrium, that several members should succumb. What to me is surprising, when we look at the community at large, is to see how one person, promulgating the most peculiar and extravagant notions, notions which are utterly foolish, can obtain a very large and enthusiastic following, and yet, on the whole, how comparatively seldom it is that a person recognized as insane does influence the people in his or her environment. It would naturally be expected that the weaker and more ignorant people of the insane person's environment would come under the influence of his delusions, and yet it seems to be quite rare.

I recall one instance, a young man now in the Boston Insane Hospital, a Russian Jew, who came to me some years ago at my office complaining of persecution. His story was that he had wished to marry a girl, but her family had objected and wished him to marry the older sister. He did not wish to marry the older sister and wanted to marry the younger, but they gave him a love philter to excite his affection for the older daughter, and it had had a very strange and mysterious effect on him. From that he developed a chain of delusions, many of them of a sexual nature. He felt that it would be a great advantage to him if he could have sexual intercourse, yet, when he attempted it, for some reason or other it proved a failure, and there were various people talking about him, and mocking him and making fun of him. He wished to retire from his family and write a book which was going to revolutionize the world. Finally his delusions began to turn towards his sisters, that his sisters were making improper solicitations and wished him to sleep with them. After some little time his sisters themselves came to see me. One of them came under my care herself. She was a typical neurasthenic, but I found on questioning her that she did not regard her brother's ideas as anything particularly strange, that she thought a love philter was something which could be obtained. Of course she said she did not wish to have her brother come and sleep with her, but yet she did not think it was anything derogatory to her to have him say she wished it. This shows how ignorant, weak people may sometimes be influenced by ideas which others are promulgating incessantly.

Another point which the question of *folie à deux* brings up is a little bit curious. If the teachings of Bernheim and others as to suggestion are as true and as important as they say, why is it that the weak-minded and hysterical are so little susceptible to the suggestion of insane people, with delusions and strange ideas, with whom they come in contact? If suggestion were anywhere near so strong a factor as is represented, I think we ought to see a very much greater number of these cases of communicated, induced insanity.

Dr. Worcester: Several years ago a young Jew, at least a man of Jewish birth, who had renounced Judaism as a religion, was received into the Danvers Asylum. He had the idea that he received direct inspirations and revelations from the Almighty, which led him to various peculiar acts, for which he was brought to the hospital, and he was visited by a dentist, as I understand, in quite good practice in Boston, who assured us that he believed that this man was all that he claimed to be, and told us that there was a sort of society that held similar views, and all of them claimed to be more or less under divine inspiration. A few months ago a young woman was received who had been claiming that under divine direction she was required to give up work. She was a servant girl; had been a very industrious girl. She had been directed to go without food for a long time, and to spend a number of successive nights out of doors in the rain, exposed to all sorts of weather, and it was stated that she had given not only all of her own savings, but all that she could borrow from friends, and I think from one or two relatives, to a man who had a strong influence over her, and on inquiry it appeared that he was this same man, Kahn. Kahn was discharged with the understanding that he was to go to New York. I think he was sent to New York by the city authorities, and he had returned to this part of the country and had obtained a strong influence over this young woman, so that she considered herself bound to obey all his instructions, believed him to be divinely inspired, considered she was so to a certain extent herself, but firmly believed in his inspiration and that he was very far superior to herself. He came to see her and obtained admission on one occasion, and came again and was not admitted. She was sent to her friends in Nova Scotia, and I do not know what has become of her. I should judge there were a number of persons in Boston who participated in what were, in the case of this Kahn and in the case of the young woman, insane delusions, and not only in regard to the personality of this man, Kahn, but of themselves.

We have at present a patient in the hospital who came with the history of belief that she had been imposed upon in regard to love affairs. A certain man had offered himself to her in marriage. She was a woman about fifty, and after due deliberation decided to accept him. He, in the meantime, in her opinion, had been influenced by another man, who had circulated slanders, to reject her, and she had been quite demonstrative in regard to both him and the man she considered the cause of her loss. She had also the idea that the organist in the church which she attended was in love with her, had made some advance towards him. Her daughter, a young woman nineteen or twenty years old, who has come to see her, accepts all her ideas fully, but she is at large, and not, as far as I know, considered insane.

I have seen one or two quite peculiar instances in which an attack of insanity in one person appeared to be the exciting cause of a similar attack in another while I was at the Kalamazoo Hospital. Application was made for the admission of a man and his wife. The woman had been attending services of the Salvation Army and had become much excited, and finally became maniacal. Her husband, who had not been particularly interested in these exercises, had been taking care of her, and shortly developed very similar symptoms. The woman recovered within a few months, but the man became permanently demented. There was a similar case in two sisters. One sister had been attending some rather emotional religious services and became insane, and the other came home to take care of her, and in a short time became insane, with similar symptoms — both excited and confused. My recollection is that they both recovered.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, APRIL 12, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.

THE RESPONSIBILITIES AND QUALIFICATIONS OF A HEALTH COMMISSIONER.

IT is probably quite true that the discovery of the protective power of vaccination "at the very threshold of the nineteenth century," and the introduction of its practice, constituted the real beginning of the art of public sanitation, and that most progress in the improvement in the public health hitherto, and to a great extent later, came from advantages incidental to the march of civilization, such as banishing malaria by draining the land for agricultural purposes.

If the art of sanitation was due chiefly to small-pox, the science of public health owes its origin fully as much to another pestilence, cholera, the first spread of which over Europe and America in 1831 thoroughly aroused Western Europe and America to attempts, for the most part thoroughly crude, for its prevention. Then came the official registration of vital statistics in England and Massachusetts, and later the establishment of local and general boards of health, which began soon to be such in something more than name, and the discoveries one after another in rapid succession of the preventive measures which have practically driven out some of the most fatal diseases and have made the ravages of others enormously less.

And yet only twenty years ago, in one of the classic essays of Dr. John S. Billings, the statement is made that "it can be shown that the direct pecuniary loss to this country on account of preventable sickness and mortality is certainly over $100,000,000 annually, and this without taking into account expenditures incurred on account of sickness, etc., or the unusual losses due to great epidemics, both from waste of life and injury to commerce. It is evident, therefore, that hygiene is not only a subject of scientific interest to the student, or to medical men, but that to the political economist and to the legislator its problems and discoveries ought to be of great practical importance — greater, in fact, than many of the subjects with which these gentlemen usually occupy themselves."

These problems, as put by Dr. S. W. Abbott, for cities and towns, are chiefly the management and control of infectious diseases, including notification, isolation, disinfection, vaccination and the supervision of infectious disease hospitals; the inspection and abatement of local nuisances; the sanitary inspection of the food supply, and especially that of milk, provisions and animals used for food; street cleaning; the collection and disposal of ashes, garbage and refuse; tenement house inspection; medical inspection of schools; supervision of foundlings, infant asylums and lying-in hospitals; inspection of plumbing; inspection of bakeries; inspection of barber shops; registration of vital statistics, and supervision of burials; care of public bathing establishments; regulation of offensive trades; regulation of stables; supervision of the municipal water supply, and the system of sewerage and sewage disposal. In seaboard cities, moreover, which are ports of entry, the health boards are charged with very grave responsibilities connected with quarantine.

It should be the duty of boards of health, also, to keep in touch with all the discoveries in sanitary science, to be familiar with every advance in the art of protecting the health of the community and to be able themselves to prepare and devise schemes for minimizing the ravages of disease.

With such duties before the boards of health, it is obvious that the members of such boards must be selected with the greatest care as to their character and qualifications. The community has the right to demand that such responsibilities should be entrusted only to competent persons, and that matters so vital as the lives and health of the citizens should be placed above the plane of political preferment — should never be used as counters in the political game.

PHYSICAL TRAINING AND SWEDISH GYMNASTICS.

IF one stops a moment to consider the attention now being given to physical exercise and training in all its manifold forms, one wonders why the nineteenth century has found this systematic cultivation of the body so essential an element in education, when our ancestors were sturdy and rugged and well without it. Our educational system in general seems designed to thwart the efforts of nature in eradicating the weak and unfit. The more unfit for the struggle of life a person is, the more strenuously we strive by the various means which our increasing knowledge provides to correct his weaknesses, and to find a place for him in society. The weak are clearly the pampered element in the community. Even the idiots are likely soon to be made highly useful to their fellow beings, if the comprehensive plans looking to their improvement are carried out. This we call civilization and progress, which no doubt it is, when regarded from an ethical standpoint, and this is the only standpoint which society at present permits. In the second place, with the increasing concentration in cities, and the more strenuous school life to which

children are constantly being subjected, the needs of physical development are continually growing more apparent. The school desk is assuming an importance for the future physical welfare of the race which a few years ago would have been thought quite unreasonable. Hence the necessity for a counteractive influence, both in the way of exercises to correct inevitable defects, and in a more intelligent provision for proper school furniture, as we have insisted in our editorial communication of March 29th. Superintendent of Schools Seaver has stated that the purpose of gymnastics in the schools is to serve as an antidote to the school desk. In any case gymnastics in some form and systematic exercise have apparently come to stay, and unquestionably will fill a more and more important place in the broad scheme of education as the tendencies toward weak bodies grow with the enervating influences of concentration in large cities. Boston now has its Physical Education Society, which finds ample matter for discussion in the problems which the physical side of man's organization presents. The notable advance made in the last few years lies essentially in this intelligent discussion of the whole subject. If physical education is worth developing at all, it is worth developing with the very best light at our disposal. We must eradicate the idea that it is a matter of comparative indifference how the exercise is taken. Intelligent supervision is always necessary to accomplish the best results, a fact which is rapidly coming to be recognized by those interested in the general subject of systematic physical training.

We are glad to call attention to an admirable paper on the subject of "Swedish Gymnastics," by Professor Hough, of the Massachusetts Institute of Technology, and privately printed. Professor Hough reviews the topic from a general biological and yet eminently practical point of view. He points out the possible defects of the Swedish system if improperly applied through uninspiring teachers, but insists that in this system when well taught there is opportunity for excellent results, since it is clearly based on sound physiological principles. Regarding the statement not infrequently made, that the physical side should be developed by play and not work, as gymnastics are apt to be regarded, Hough very correctly says, speaking of deformities of the spine, for example:

"There can be no doubt that such deformities, when not too grave, can be corrected in the manner indicated (namely, by gymnastics), and it is in this field that gymnastic work in our schools does what play alone cannot do. When, for example, stooped shoulders have been acquired by faulty position, spontaneous play gives no stimulus to bring about that contraction of back muscles which will correct the fault. Indeed, in many cases play only accentuates the fault because of the natural tendency to use the stronger muscles and to disuse the weaker ones. This must be especially true of unregulated play, and, even with supervision, attention cannot, in general, be given to the manner in which a movement is made. Play is, therefore, not a practical method of corrective work."

In his concluding remarks Hough insists that in physical training two aims are pre-eminently important. He writes as follows:

"(1) The general effects of bodily exercise, including the acquisition of that amount of physical endurance which the special conditions of each individual life demand. I place this first, for it is the chief object of physical training.

"(2) Correction of physical faults, both deformities of the muscular and skeletal systems and deficiencies in the nervous control of the body. I have tried to show that this is rendered necessary by the specialization of life, and is especially necessary with that specialization which marks the period of development, and which may be summed up in the two words, 'the school desk.'

"The primary purpose of the Swedish system of gymnastics is the second of these objects. Its system of movements is based on a most careful study of kinesiology. It studies the effects of the innumerable possible movements upon the development of the body — that is to say, upon form and carriage — and it makes use of such movements as are known to be fitted to accomplish the corrective effects desired. It gives these movements in that way which will best ensure with all members of the class their proper execution and greatest corrective value — that is, in the form of a drill and to the word of command; and it gives them with constant reference to such progression, both in the work of each day and especially in the work of successive days, as to secure the effects of training without undue fatigue or strain."

It is much to be hoped that with all the agitation from various quarters, the much discussed school desk may gradually emerge in some ideal form, which will meet all demands. We require all such prophylactic measures, though we are by no means so optimistic as to believe that the need for systematic physical training will thereby be abolished.

MEDICAL NOTES.

Modern Bullet Wounds. — It appears that wounds inflicted by the Lee-Metford bullet are very similar to those made by the Mauser. There has been an increasing opportunity to observe the effect of the former bullet, as the number of wounded Boers falling into English hands has grown. Sir Wm. MacCormac, in the *Lancet*, sums up the general character of the wounds as follows: "It will again be noticed how many apparently most serious abdominal wounds are recovered from — in one of the cases mentioned above after the formation of a fecal fistula. The chest and lung wounds are quite similar in their consequence to those of the Mauser bullet. I have now seen a very large number of cases of abdominal injury in which recovery has followed an expectant treatment and where

without any reasonable doubt the intestines must have been perforated, a few in which the stomach was traversed, and two or three liver injuries. I myself entertain no doubt that in the future a perforating gunshot wound of the abdomen where from the direction taken by the bullet the intestine has almost certainly been traversed is no longer an indication of the necessity of immediate operative interference." A special correspondent of the same paper also writes: "I have not touched on the subject of bullet wounds this week, as your other correspondents keep you *au courant* with the variety of cases, but they still present the same weird characteristics as regards the courses which the bullets take. The more one sees of them the more one marvels how these missiles can inflict such slight injuries during their erratic progress. After this campaign I am open to believe anything I hear about the courses of Mauser bullets as long as I am not asked to verify their stopping powers when a bone has not been struck or a vital organ reached."

INTERNATIONAL CONGRESS OF ELECTROLOGY AND MEDICAL RADIOLOGY.— It is officially announced that the International Congress of Electrology and Medical Radiology is to be added to the International Congresses at the general Exposition in Paris, and will hold its meetings from July 27th to August 1st.

A UNIVERSITY FOR HAMBURG, GERMANY.— It is said that a plan is being developed to establish a university at Hamburg. The faculty of medicine would have excellent facilities for instruction, on account of the large hospital at Eppendorf.

DR. ST. GEORGE MIVART BURIED IN UNCONSECRATED GROUND. — Dr. St. George Mivart, whose death we mentioned last week, was buried in unconsecrated ground on account of his recent differences with the Archbishop of Westminster.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, April 11, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 61, scarlatina 34, measles 102, typhoid fever 7.

AMENDMENTS TO MASSACHUSETTS REGISTRATION LAWS REFUSED. — The recommendations made by the Board of Registration in Medicine in its annual report recently issued for amendments to the registration laws to further restrict medical practice have been heard adversely by the Legislative Committee on Public Health. The Committee reported "no legislation necessary." The recommendations relate mainly to the educational features of the registration act and to the practice in the border towns by physicians residing in the adjoining States. It would seem that such reasonable recommendations should have received a favorable consideration.

INCREASE IN OUT-PATIENTS AT THE MASSACHUSETTS GENERAL HOSPITAL. — The following statistics show the extraordinary increase in the number of out-patients coming to the Massachusetts Hospital over a period of twenty-nine years, and serve as a further demonstration of the need of greater facilities for their treatment:

New cases.	Whole number of visits.	Average (daily).
8,767	1870	
16,993	1875, 35,458	116
20,566	1880, 37,245	120
17,016	1885, 39,165	125
22,545	1890, 57,019	182
29,146	1895, 90,683	297
31,003	1899, 104,205	340

A FINAL DECISION REGARDING DUTY ON SURGICAL INSTRUMENTS. — The United States Circuit Court of Appeals has confirmed the decree of the Circuit Court in the case of the Massachusetts General Hospital, in favor of the hospital. The court holds that an importation of surgical instruments made by the hospital for use in surgical instruction to medical students is entitled to entry duty free under an act of 1894, which exempts "philosophical and scientific apparatus, utensils and preparations from tariff duty."

REDUCTION IN BOSTON'S DEATH-RATE. — Returns to the Board of Health show a considerable diminution in the number of deaths during the past week, as compared with those immediately preceding. Deaths attributed to influenza for the week ending April 7th were 21, as against 33 for the week before. There was an increase of only 52 deaths in the entire city for this week over the number for the corresponding week last year, the totals, respectively, being 276 and 224. Last week's death-rate is 25.9.

THOMAS F. ROCHE, M.D. — Dr. Thomas Francis Roche, for fourteen years resident physician at Deer Island, Boston Harbor, died at his home in East Boston, April 8th, after a brief illness. Dr. Roche was thirty-seven years old at the time of his death. He was graduated from the University of New York, and in 1886 was appointed resident physician at Deer Island, during Mayor Hugh O'Brien's administration. Dr. Roche leaves a mother and four sisters.

THE ANN WHITE VOSE HOUSE FOR NURSES: A BEQUEST.— The Ann White Vose House for Nurses, the latest addition to the Boston City Hospital buildings, is completed and was open for inspection Saturday of last week. The building is an elaborate one, and admirably designed for the purpose to which it is to be put. Its existence is due to a liberal bequest from the estate of the late Ann White Vose.

NEW YORK.

CHRISTIAN SCIENCE MUTE. — William A. Purrington, Esq., lecturer in the University and Bellevue Hospital Medical College upon "Law in Relation to Medical Practice," whose book on Christian Science was recently noticed with commendation in the JOURNAL, on April 1st made an address at the Broadway Tabernacle, on "The Sophistries and Dangers of Christian Science." In the course of it he said: "It is well settled law that the individual's right to believe does not imply a right to manifest bizarre beliefs in

acts injurious to the physical and moral welfare of others." He also related some correspondence he had with Carol Norton, who is on the Board of Christian Science Lecturers. The following questions were asked the latter: "If material aids to the injured are harmful, what course would you, or Mrs. Eddy, adopt in the following cases? (*a*) Walking along the street, a brick falls from above and cuts your head, causing blood to flow. (*b*) A child at table swallows a fish-bone, and is in danger of strangulation. (*c*) Your child is riding in a street-car, and a person with confluent small-pox sits down beside it. (*d*) A child in the street is run down by a cable car, and bleeds from a severed artery. (*e*) A baby falls from a window and fractures its skull." Mr. Purrington read two replies to his questions, which were as follows: "The questions in your letter I will shelve for the present, desiring to do one thing at a time"; and later, after being pressed for an answer: "I prefer to shelve them because to answer them would bring about wholly indifferent results."

The Tenement House Commission.— In the final days of the Legislature a bill was passed which provides for a Tenement House Commission for the cities of New York and Buffalo, to report to the next Legislature, and in order to ensure its passing Governor Roosevelt on April 2d sent in a message of urgency, the concluding portion of which was as follows: "Against this concrete and mercenary hostility to the needed reform we can marshal only the general sentiment for decent and cleanly living and for fair play to all our citizens. Too often the sufferer himself is dumb, either because he cannot express himself or because he knows not what remedy to advocate. In his interest and in the interest of all our people — above all, in the interests of the State, whose standard of citizenship in the future is partly dependent upon the housing of children in the tenement districts of the present — we should see to the improvement of the conditions which now make the congested districts of our great cities a blot on our civilization. Great good was accomplished in the Tenement House Commission appointed under a similar bill a few years ago. The good is now in part being nullified and a new commission is urgently needed." The reference in the last sentence is to the present building laws, which permit the erection of tenement houses which, though less disreputable in appearance than the old ones, are, because of their immense size and their inferior light and air shafts, worse from a hygienic standpoint.

A Decision Affecting Water Supplies. — Justice Dickey of the Supreme Court has rendered a decision which will save the city many thousand dollars. The city acquired the bed of Lake Glenside, in Putnam County, together with the waters of the lake, for the sanitary protection of a storage reservoir in the Croton water-supply system which was partially fed by the lake. The commissioners in the proceedings received, against the objection of the Corporation Counsel, evidence tending to show partial ownership of such waters, and made awards to various persons who were vested with the right to draw water for ordinary domestic use. The contention of the city was that this class of evidence would result in the adoption of an enormous measure of damage, and increase the cost of acquiring additional ponds to an amount almost prohibitive. The decision is a refusal to confirm the awards.

State Hospital for Incipient Phthisis. — A second bill, in regard to which the Governor also sent an emergency message to the Legislature, was that providing for the establishment in the Adirondacks of a State hospital for the treatment of incipient pulmonary tuberculosis. It is to be regretted that the bill, before its passage, was amended by the reduction of the appropriation for the hospital originally contemplated to the inadequate sum of $50,000.

No More Toy Pistols.— After the next Fourth of July there are likely to be fewer cases of tetanus having the toy pistol as their primary etiological factor, as Governor Roosevelt has signed a bill which makes it a misdemeanor to sell or give a toy pistol in which blank cartridges are used to a person under sixteen years of age.

Dr. Edward Chapin Appointed. — The State Board of Regents has appointed Dr. Edward Chapin, of Brooklyn, a member of the State Board of Medical Examiners, to fill the vacancy caused by the death of Dr. A. R. Wright, of Buffalo.

Pharmaceutical Association. — On April 4th the Greater New York Pharmaceutical Society, with principal office in the Borough of Manhattan, was incorporated at Albany.

Transfer of Hospital. — Another bill passed by the Legislature was one transferring the Brooklyn Homeopathic Hospital to the City of New York.

ARMY NOTES.

Anemia and Other Diseases in Puerto Rico. — The valuable work being done by army medical officers stationed in our new possessions has recently been instanced by a circular issued by the Board of Health of Puerto Rico, relative to the anemia so prevalent on that island. It appears that this form of anemia is extremely fatal and in the circular it is shown that not less than 2,000 persons died in Puerto Rico from this cause alone during the two months of October and November last, fifty-seven municipalities reporting 1,000 deaths from this cause in October alone. The cause of this anemia had previously been regarded as an existing malarial infection. Recently, however, it was demonstrated by Lieut. Bailey K. Ashford, Assistant Surgeon United States Army, that this anemia was due to ankylostomiasis, and he was able to determine the presence of the ankylostomum duodenale in 19 out of 20 cases of grave anemia which came

under his care in the Ponce Provisional Hospital. The disease appears to be much more prevalent among the native laboring classes of the rural districts, but Lieutenant Ashford has also observed it in a considerable number of United States soldiers. The circular above referred to, announcing Lieutenant Ashford's discovery, has been sent to all the physicians on the island for their information and guidance. Some months since, Lieut. Walter Cox, Assistant Surgeon United States Army, demonstrated the existence of "malta fever" in a considerable number of cases of fever in Puerto Rico, which did not present the plasmodium and proved refractory to quinine. Special work in connection with yellow fever is being carried on in Havana by Dr. Aristides Agramonte, Acting Assistant Surgeon United States Army, and investigation along the same lines is being carried on by medical officers attached to the Army Medical Museum, at Washington. Much excellent work is being done in the Army Medical Laboratory at Manila, it being understood that the subjects of bubonic plague and beri-beri are receiving especial attention.

DISINFECTANT VALUE OF "ELECTROZONE." — An investigation into the disinfectant value of "electrozone," the disinfectant used by the engineer authorities in the sanitary regeneration of Havana, has just been completed by Major Walter Reed, of the Army Medical Museum, under instructions from the Surgeon-General. While no official report has as yet been rendered by Major Reed, it is understood that "electrozone," when prepared by the electrolysis of sea-water during a period of eight hours, was found to possess well-marked germicidal properties. On the other hand, it was found that the Havana establishment maintained no standard for "electrozone," and that the time during which electrolysis was continued, as well as the strength of the electric current, was suffered to vary very greatly. Taking into consideration the time required for the production of an effective disinfectant, the capacity of the Havana plant appeared to be much overrated. The original cost of this plant, $75,000, together with the expense of operation, would seem to render the adoption of this system in other Cuban cities quite inadvisable. It appears that "electrozone" has been used in Havana largely for the disinfection of streets and sewers, and has been but little employed for house disinfection.

REMOVAL OF BODIES FROM THE PHILIPPINES. — The work of bringing home the bodies of soldiers who have died in the Philippines has been completed for the season, and the work of disinterment will not be resumed until next November. Since last November, when the work was begun, about 1,100 bodies have been shipped from Manila to San Francisco. About 500 bodies are said to still remain in the Philippines, nearly all in the vaults of the several cemeteries around Manila. These bodies the War Department would have also removed had not the citizens of Manila objected to their disinterment during the summer months.

PLAGUE AT HONOLULU. — A recent report from Major B. D. Taylor, Surgeon United States Army, in charge of affairs of the Medical Department at Honolulu, states that the outbreak of bubonic plague at that point has been brought under control, although the disease is still present. A case crops up every now and then, and Major Taylor believes that this condition will probably continue for some time to come. One death from plague has been reported from the Island of Mani, but no more from Hilo, on the Island of Hawaii. The health of the troops stationed at Honolulu is reported as being excellent.

Miscellany.

THE HEAT IN ARGENTINA.

WE extract the following surprising details of the recent period of great heat in Buenos Ayres from a daily contemporary:

"The details published in the Argentine papers about the recent heated spell, which was reported by cable dispatches as desolating the whole republic, but principally Buenos Ayres, are quite horrifying. The months of January and February experienced nearly every day heat greater than had ever before occurred in the country. But at the end of the spell the heat was still more tremendous than at the beginning, and no less than 410 deaths occurred in three days in the city of Buenos Ayres. The capital, ever so full of noise and activity, looked, especially during the hot hours, like a deserted place. Stores and offices were closed everywhere. The thermometer went up in the shade to 40° Centigrade (107 ° Fahr.), and very little rest was brought by the night, for there was not the slightest breeze, and the pavement, heated during the day, prevented the usual coolness from being felt at all. The few people whose business compelled them to appear in the streets fell down as if struck by a mallet, and most of them succumbed to delirium and insanity after a few hours, if they were not killed instantly by the sun's rays.

"The employés of the sanitary service and in the hospitals had not a minute of repose. Provisions were not received from the surrounding country, which was suffering also from the heat, which prevailed along the estuary of La Plata. Ice especially became scarce, and was sold at $40 instead of $2.00 in gold, its usual price. In the cemeteries the number of grave diggers was insufficient, though they were assisted by many ordinary laborers. Twenty-five of these grave diggers were taken sick, and had to give up work. The putrefaction of the corpses was almost immediate, and the horrible smell rendered inhumations still more difficult. Numerous corpses were left exposed for twenty-four hours, waiting for identification. The loading and unloading of vessels was suspended during the four or five days of the most extreme heat. The newspaper of ex-Vice-President Pellegrini, *El Pais*, opened a public subscription for the assistance of the families of the victims of the heated spell, and gathered $7,605 the first day of the subscription. There was also great loss of life and much suffering in Santa Fé, Rosario, Corrientes and other provinces."

Correspondence.

A CASE OF INTESTINAL OBSTRUCTION FROM A HAIR-BALL.

BOSTON, April 9, 1900.

MR. EDITOR: — May 30, 1899, I was called to Manchester, N. H., to see the patient, E. B. H., in consultation with Dr. Boutwell. The patient, a girl of ten, had been sick two weeks. The symptoms at first pointed to indigestion. After repeated and unavailing attempts to move the bowels symptoms of complete obstruction came on.

I saw the patient fourteen days after the onset of the attack. She was very much emaciated, with a pinched and anxious-looking face. Her eyes were partly closed. She was lying on her back with her knees drawn up, moaning and partly stupid. Pulse 110, but very weak and irregular. Temperature 99°. The abdomen was not tender on palpation, but was symmetrically distended. Coils of intestines could easily be seen through a thin abdominal wall. In the median line over the region of the bladder was felt a sausage-like mass about the size of half a banana. This was slightly compressible, freely movable and could be pushed from one side of the abdomen to the other.

The diagnosis of intestinal obstruction was made and operation advised. A bad prognosis was given owing to the condition of the child, who was almost moribund.

The patient was moved to the Sacred Heart Hospital where the operation was performed.

On opening the abdomen in the median line above the umbilicus, distended and collapsed intestines presented. The mass was felt up under the liver and was drawn out of the abdomen. It was situated in the small intestine. As it could neither be pushed along the intestine or broken up, the bowel was incised and a mass of hair was delivered. The incision in the intestine was closed by interrupted Lembert sutures of silk, and the abdomen closed with a gauze wick to the intestinal suture.

In spite of a rapid operation, the patient steadily failed and died five hours later.

Subsequently I have learned that the girl had a habit of chewing the ends of two curls which were long and hung over her shoulders. Her teacher at school had tried to break the habit without success.

The hair-ball measured three and one-half inches long and four and one-half in circumference. It was composed of long and short hairs firmly matted together.

Very truly yours,

G. W. W. BREWSTER, M.D.,
Surgeon to Out-Patients, Massachusetts General and Carney Hospitals.

HAIR-EATING CHILDREN AND CONVULSIONS.

ROXBURY, MASS., April 7, 1900.

MR. EDITOR: — I give below the account of a case which has considerably interested me:

I was called a short time ago to see a child, of two years of age, with convulsions. The mother gave me a history of whooping-cough for a week. Later that night I was again called for the same reason. The convulsion was over when I arrived. In watching the child I noticed that he picked at the blanket, and pulling off some of the hair, put it in his mouth. The mother stated that it was a constant habit ever since the child was born. He would pick at the carpet, his undershirt, in fact anything of a hairy nature. Thinking that perhaps this habit might have something to do with the convulsions, I gave the child some one-tenth-grain calomel tablets. When I called again the mother stated that the child had passed a ball of hair as large as a silver dollar, together with some smaller masses. It is perhaps needless to say that the child has had no more convulsions.

Very truly yours,

FREDERICK D. LYON, M.D.

DEVELOPMENT OF THE MICROSCOPE.

BOSTON, April 3, 1900.

MR. EDITOR.— In response to a number of suggestions and requests, I have undertaken to form a collection of microscopes and accessories illustrating the development of the instrument, to be placed in the Museum of the Harvard Medical School. The nucleus of such a collection has already been made by the placing in my hands of several old and extremely interesting pieces of apparatus.

May I ask you to give publicity to the fact that if any of your readers are in possession of microscopes that will illustrate this development, and are willing to deposit them in this collection, I will gladly receive them and see that they are properly labelled, displayed and acknowledged.

Very truly yours,

HAROLD C. ERNST, M.D.,
Harvard Medical School,
688 Boylston St., Boston, Mass.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MARCH 31, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diphtheria and croup.	Scarlet fever.	Measles.
New York	3,854,594	1628	510	19.62	25.02	2.70	.96	1.86
Chicago	1,810,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	—	—	—	—	—	—	—
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	316	67	21.12	34.24	2.56	.96	.64
Baltimore	506,389	240	64	13.86	25.20	2.52	.42	—
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	—	—	—	—	—	—	—
Washington	277,000	136	34	24.42	32.56	1.48	—	.74
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	114	27	11.44	37.84	1.76	—	.88
Nashville	87,754	40	13	17.50	25.00	—	—	2.50
Charleston	65,165	—	—	—	—	—	—	—
Worcester	111,732	37	12	10.80	21.60	—	5.40	—
Fall River	103,142	72	34	9.34	45.87	—	1.39	—
Cambridge	92,520	35	8	17.16	34.74	—	5.71	—
Lowell	90,114	57	11	10.50	7.00	—	—	—
New Bedford	70,511	22	6	32.32	32.32	4.76	8.30	—
Lynn	68 218	32	—	12 50	9.36	—	—	—
Somerville	64,394	29	3	10 35	34.48	—	—	—
Lawrence	59,072	25	7	16.00	12.00	—	—	—
Springfield	58,286	35	8	17.14	20.58	2.86	—	—
Holyoke	44,510	22	8	20.75	20.75	4.15	—	—
Brockton	38,759	13	1	7.69	53.83	—	—	—
Salem	37,723	10	2	—	20.00	—	—	—
Malden	36,421	23	2	17.36	17.36	4.37	—	—
Chelsea	34,235	21	6	9.52	—	—	—	—
Haverhill	32,651	17	1	23.54	17.64	—	—	—
Gloucester	31,426	27	2	14.80	—	—	—	—
Fitchburg	30,523	5	2	20.00	20 00	—	—	—
Newton	30,461	14	2	—	7.14	—	—	—
Taunton	29,527	—	—	—	—	—	—	—
Everett	28,102	10	2	—	20.00	—	—	—
Quincy	24,578	8	4	12.50	37.50	12.50	—	—
Pittsfield	23,421	—	—	—	—	—	—	—
Waltham	22,791	9	1	22.22	11.11	—	—	—
North Adams	21,583	7	4	7.14	14 28	—	—	—
Chicopee	18,316	12	6	16.66	25.00	—	—	—
Medford	17,190	—	—	—	—	—	—	—
Newburyport	15,636	14	2	—	37 50	—	—	—
Melrose	14,721	10	3	20.00	20.00	20.00	—	—

Deaths reported 3,039; under five years of age 855; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 555, acute lung diseases 788, consumption 316, diphtheria and croup 71, measles 36, diarrheal diseases 29, whooping-cough 29, scarlet fever 28, typhoid fever 20, cerebrospinal meningitis 15, erysipelas 11.

From whooping-cough New York 20, Boston 7, Providence and Cambridge 1 each. From scarlet fever New York 16, Boston 3, Worcester, Cambridge and New Bedford 2 each, Baltimore and Hyde Park 1 each. From typhoid fever New York 6, Boston 3, Washington and Providence 2 each, Fall River, Lowell, New Bedford, Malden and Haverhill 1 each. From cerebrospinal meningitis New York 9, Boston, Baltimore, Worcester, Somerville, Brockton and Gloucester 1 each

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending

March 24th, the death-rate was 21.6. Deaths reported 4,807: acute diseases of the respiratory organs (London) 456, whooping-cough 141, measles 123, diphtheria 91, diarrhœa 45, fever 38, scarlet fever 33, small-pox (Hull) 1.

The death-rates ranged from 10.7 in Burnley to 36.7 in Wolverhampton: Birmingham 24.2, Bradford 18.2, Croydon 15.5, Gateshead 20.5, Hull 19.4, Leeds 20.5, Liverpool 31.3, London 20.6, Manchester 26.8, Newcastle-on-Tyne 20.2, Nottingham 20.4, Portsmouth 18.5, Salford 26.2, Sheffield 22.4, Sunderland 24.8, West Ham 19.4.

METEOROLOGICAL RECORD

For the week ending March 31st, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.			Relative humidity.		Direction of wind.		Velocity of wind.		We'th'r. *		Rainfall in inches
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S...25	29.98	32	43	22	44	34	N.W.	N.W.	17	6	C.	C.	
M..26	29 82	37	45	29	56	91	74 S.E.	S.W.	3	4	F.	N.	
T...27	29.72	40	47	32	95	55	75 W.	W.	7	7	O.	C.	.24
W..28	29.91	38	46	31	47	49	48 N.W.	N.W.	14	16	C.	C.	
T...29	29.96	40	47	32	58	34	46 N.W.	N.W.	15	9	C.	C.	
F...30	29.95	37	42	32	38	65	52 N.	S.E.	7	5	O.	O.	
S...31	29.73	36	42	30	62	42	52 N.	N.E.	15	22	O.	F.	.01
☞													.25

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☞ Mean for week.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING APRIL 7, 1900.

J. C. ROSENBLUTH, passed assistant surgeon, ordered to the "Wilmington," sailing from New York City, April 8th, to join ship at Rio de Janeiro, Brazil.

F. C. COOK, passed assistant surgeon, detached from the "Wilmington" and ordered to proceed home by mail steamer.

F. URIE, surgeon, commissioned from October 25, 1899.

W. M. WHEELER, passed assistant surgeon, commissioned passed assistant surgeon from May 27, 1900.

D. N. CARPENTER, passed assistant surgeon, commissioned passed assistant surgeon from October 24, 1899.

F. L. PLEADWELL, passed assistant surgeon, commissioned passed assistant surgeon from October 25, 1899.

W. F. ARNOLD, passed assistant surgeon, detached from the Naval Nospital, Norfolk, Va, and granted leave for three months.

G. D. COSTIGAN, passed assistant surgeon, detached from the Naval Hospital, Chelsea, Mass., and ordered to the Boston Navy Yard immediately.

D. N. CARPENTER, assistant surgeon, detached from the Boston Navy Yard and ordered to the Naval Hospital, Chelsea, Mass., immediately.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING APRIL 5, 1900

WASDIN, EUGENE, surgeon. To proceed to Buffalo, N. Y., and assume command of the Service. March 31, 1900.

STONER, J. B., passed assistant surgeon. Relieved from duty at Buffalo, N. Y., and directed to proceed to St. John, N. B., for duty as medical inspector of immigrants. March 31, 1900.

YOUNG, G. B., passed assistant surgeon. Granted two days' extension of leave of absence on account of sickness. March 31, 1900.

DECKER, C. E., assistant surgeon. Granted twenty-nine days' leave of absence on account of sickness from March 2d. March 31, 1900.

CLARK, TALIAFERRO, assistant surgeon. On being relieved from duty at Tortugas Quarantine, to proceed to New York, N. Y. (Stapleton), and report to medical officer in command for duty and assignment to quarters. April 4, 1900.

MCMULLEN, JOHN, assistant surgeon. On being relieved from duty at Louisville, Ky., to proceed to Tortugas Quarantine and assume command of the Service. April 2, 1900.

ANDERSON, J. F., assistant surgeon. Relieved from duty at Barcelona, Spain, and directed to proceed to Marseilles, France, for duty. March 30, 1900.

GWYN, M. K., assistant surgeon. Relieved from duty at Chicago, Ill., and directed to proceed to Louisville, Ky., and assume command of the Service. April 2, 1900.

CORPUT, G. M., assistant surgeon. Upon being relieved from duty at Marseilles, France, to proceed to Washington, D. C. March 30, 1900.

VOGEL, C. W., assistant surgeon. Relieved from duty at New York (Stapleton), and directed to report to Surgeon L. L. WILLIAMS, Immigration Station, New York, for duty. April 4, 1900.

ALTREE, G. H., acting assistant surgeon. Granted leave of absence for three days. April 5, 1900.

BULLARD, JOHN T., acting assistant surgeon. Granted leave of absence for sixty days from April 3d. April 3, 1900

FOSTER, S. B., acting assistant surgeon. Granted leave of absence for one month from April 6th. April 5, 1900.

WOODS, C. H., hospital steward. Granted leave of absence for fifteen days from April 6th. March 29, 1900.

SCHLAAR, W. F., hospital steward. Granted leave of absence for twenty-five days from April 2d. April 5, 1900.

APPOINTMENT.

ALLAN J. MCLAUGHLIN, of New Jersey, commissioned as assistant surgeon. April 3, 1900.

SOCIETY NOTICES.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. — A regular meeting of the Society will be held at the Medical Library, 19 Boylston Place, on Monday evening, April 16th, at 8 o'clock.

Subject: "Intestinal Perforation in Typhoid Fever."

Drs. Geo. B. Shattuck, J. C. Warren and Farrar Cobb, the committee appointed to consider and collate the cases reported at the meeting of the Society, January 8, 1900, will present a carefully prepared report. The members who reported cases at the previous meeting will take part in the discussion.

Election of new members, deferred from last meeting, will take place at 9 P. M.

ARTHUR K. STONE, M.D., *Secretary*, 657 Boylston Street.

SUFFOLK DISTRICT MEDICAL SOCIETY. — The Section for Clinical Medicine, Pathology and Hygiene will meet at 19 Boylston Place, Wednesday, April 18, 1900, at 8 P. M.

At 8 o'clock: A short communication by Dr. G. G. Sears.

At 8.10 o'clock: Dr. J. J. Putnam will present the subject (postponed from December meeting): "The Training in Coördination of Ataxic Patients by Fränkel's Method, with Demonstrations."

J. BERGEN OGDEN, M.D., *Secretary*,
Harvard Medical School, Boston.

THE ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES. — The Association will meet in New York City, May 31st and June 1st and 2d, at the New York Academy of Medicine, 17 West 43d Street.

C. H. ALDEN, M.D., *President*,
Association of Military Surgeons.

RECENT DEATHS

JOSEPH H. VONDY, M.D., of Jersey City, N. J., died on April 2d, of pneumonia. He was born in 1829, and was graduated from the Medical Department of the University of the City of New York in 1851. He had practised in Jersey City ever since completing his medical studies and was one of the founders of the city hospital there.

J. STERLING BIRD, M.D., of Hyde Park, Dutchess County, N. Y., died on April 3d, from pneumonia. He was born in Winchester, Conn., August 29, 1836, and had practised at Hyde Park since 1865.

BOOKS AND PAMPHLETS RECEIVED.

An Equation of Responsibility. By Edwin W. Pyle, M.D., Jersey City, N. J.

Massachusetts Institute of Technology, Boston: Courses in Chemistry and Chemical Engineering.

Recent Methods in Cardiac Therapeutics by Baths and Exercises. By Thomas E. Satterthwaite, M.D., New York. Reprint. 1900.

The International Medical Annual and Practitioners' Index: A Work of Reference for Medical Practitioners, 18th Year. New York and Chicago: E. B. Treat & Co. 1900.

Eighty-sixth Annual Report of the Trustees of the Massachusetts General Hospital, including the General Hospital in Boston, the McLean Hospital and the Convalescent Home in Waverley. Boston. 1899.

Monographs on American Social Economics: The Past and Present Condition of Public Hygiene and State Medicine in the United States. By Samuel W. Abbott, Secretary, State Board of Health of Massachusetts. Edited by Herbert B. Adams, Professor of History in Johns Hopkins University, and Richard Waterman, Jr.

Original Articles.

ON INTERMENSTRUAL DYSMENORRHEA.[1]

BY MALCOLM STORER, M.D., BOSTON,
Assistant in Gynecology, Harvard Medical School.

EVERY gynecologist will doubtless recall a few cases in which there was present at about the middle of the intermenstrual period a set of symptoms, ceasing suddenly after a day or two, much like those associated with menstruation, but without any discharge of blood or quite the characteristic pain. This phenomenon, the *molimen uterin intermenstruel, dysmenorrhœ intermenstruelle,* of the French, the *Mittelschmerz* of the Germans, sometimes called "intermediate pain or dysmenorrhea," if mentioned at all in the text-books, is stated to be very rare. I have, however, met with it no less than 18 times in 400 suitable cases in which I have inquired as to its existence this last summer. Gynecologists are still so at variance as to its causation that a consideration of the subject may be of value.

I present notes of 20 cases occurring in my own experience.

CASE I. *Chronic ovaritis and fibroid.*— L. J., thirty, colored, nullipara. Five years ago dysmenorrhea and constant pain in the left ovary. A tumor of the right ovary was then removed, but the left one, though in a suspicious condition, was not touched. The left ovarian pain was not helped by the operation, and for the last six months it has been much worse. A few months after the removal of the right ovary she began to experience on the thirteenth and, much more severely, on the fourteenth days after the beginning of menstruation a dull pain extending over the whole abdomen, but with much sharper exacerbations in the region of the left ovary, which, coming on in waves, lasts for an hour or so two or three times daily. These symptoms last from four to six days, and are unaccompanied by any discharge. During actual menstruation the patient feels better than at any other time in the month. Within the last year a fibroid the size of an infant's head has developed, but as that was presumably not present when the abdomen was opened five years ago, it can be dismissed as having no bearing upon the pain.

CASE II. *Adherent retroflexion.*— E. F., thirty-eight, three children, youngest nine. Four years ago began to have backache and dragging pain in left side, and for a day or two before and after menstruation a scratching, tearing pain in the left groin, menstruation coming on every twenty-five to thirty-two days, and the patient feeling better when actually flowing than at any other time. Three years ago began to experience on the thirteenth and fourteenth days from the beginning of menstruation much pain in the lower abdomen and back, but none in the left ovarian region. This pain comes on slowly, is at its maximum for a few hours on the second day, and then gradually dies away. It is not accompanied by discharge. A year ago her perineum was restored and ventrosuspension performed, but while her other symptoms were much helped by the operation, the intermenstrual disturbances were in no wise affected except that the seat of the pain was transferred from the back to deep in the vagina and became of a throbbing character. She is very sure that this change in the seat of the pain occurred at the very first intermenstrual period after the operation. Coitus, at all times a source of discomfort, although the woman is of fair sexual appetite, is quite out of the question during these two days, for, in her words, it feels as if there were a boil between the rectum and the womb. Defecation also is so painful during these two days that it is not to be thought of.

[1] Read before the Obstetrical Society of Boston, January 16, 1900.

Examination here showed an extremely tender, sharply retroflexed and densely adherent uterus, with much endometritis, but the appendages could not be palpated satisfactorily. We may suppose that they were not much diseased at the time of the ventrosuspension from their not having been removed.

CASE III. *Chronic pelvic peritonitis.*— E. A., thirty-two, severe attack of pelvic inflammation (gonorrheal) twenty years ago. Four years ago a miscarriage with no immediate bad effects, but ever since irregular bilateral ovarian pain and backache; much dysmenorrhea; obstinate rectal catarrh, much worse in middle of month.

In June, 1897, I removed the right ovary, which contained a small cyst, the size of a hen's egg, leaving the somewhat degenerated left ovary in deference to the demand of the patient. The appendages on each side were found buried in a mass of very dense adhesions. Afebrile convalescence. On September 1st, catamenia in perfect comfort for the first time in five years. On September 12th, an attack of sharp pain in the pelvis and right side lasting two days. I have no notes of the October menstruation, but the pain recurred November 5th, twelve days after the beginning of menstruation, it being this time on the left side.

Thus from month to month she went on with intermenstrual pain, sometimes on one side and sometimes on the other, but with no regular alternation. A year later I found a mass the size of a fist to the left of the uterus. She was then menstruating with little discomfort, but regularly on the twelfth to fifteenth day she had for three or four days this pain, dull in character, with occasional very sharp twinges. No discharge was associated with it.

In December, 1898, I opened the abdomen again and found a small encysted peritonitis each side, and removed the stump of the right tube, and also the very densely adherent left tube and ovary. The patient's condition forced me to leave the uterus behind. I had arranged to operate upon the day of the pain, but an acute digestive storm forced me to put it off for three days. Through an unfortunate accident the ovary removed was lost, but there was certainly no gross evidence of a recent or approaching rupture of a Graafian follicle. In this case menstruation has continued in spite of the removal of both ovaries, and so also has the intermenstrual pain. But considering the matted condition of the pelvis, I am not surprised that some ovarian tissue should have been left behind.

CASE IV. L. M., twenty-two, virgin. Apex consolidation with T. B. present four years ago; sound now. Lithemic; several attacks rheumatic fever. No pelvic symptoms until last few months. Menstruation in October painful; in November much more so. On November 29th (fourteen days after beginning of menstruation), sudden sharp pain in median line over pubes; feels as if everything were sinking down; considerable leucorrhea. Careful examination showed no gonococci. The next menstruation was very painful, and after it had lasted ten days, the normal being two, I curetted her and also steamed out the uterus. The appendages examined under ether were normal. Since then she has had no pelvic discomfort of any kind.

CASE V. *Interstitial fibroid, without disease of appendages.*— Mrs. G., forty-two, never pregnant. Menstruation profuse but painless. For ten years has had on the eighteenth day after the commencement of menstruation, which is delayed two days, a definite pain lasting one day, with a profuse leucorrhea which lasts three days. This pain is generally on both sides, and is of a dull, heavy character. It stops suddenly and completely. This patient was put on thyroid extract, and at the end of three months the pain had disappeared, although there was no change in the size of the tumor.

CASE VI. *Gonorrheal endometritis, with no trouble with appendages that can be discovered.*— E. R., thirty-two, one child and two miscarriages. Menstruation normal except for pain in one groin for the first day since it first appeared. For fifteen years has had on the fourteenth day

from the beginning of menstruation pain in the same place as the menstrual pain but of a quite different character. This is associated with profuse leucorrhea, lasts two or three days and then ceases at once and completely.

CASE VII. *Endometritis and very mild chronic salpingitis.*— S. P. (Disp. 2,478). Two years ago a miscarriage, followed by salpingitis. Some months subsequently began to have on the fourteenth day dull pain on the left side lasting two to three days. Menstruation painless. Patient greatly relieved by six months' local treatment.

CASE VIII. *Retrocession from parametritis; right ovary prolapsed; both ovaries thickened; endometritis.*— M. B. (Disp. 3,448). Miscarriage one year ago. For the last six months has been having pain on the fourteenth or fifteenth day, lasting for two or three days. No increase of leucorrhea. The pain is on the left side and running down the left leg; no pain ever on right side. Menstruation has stabbing pain in back of a different character.

CASE IX. *Adherent retroversion, with prolapsed and adherent appendages; endometritis.*— C. S. (Disp. 3,582). Gonorrhea six months ago; miscarried five months ago. For the last four months has had pain on the fourteenth day from the beginning of menstruation. The pain is in back and around umbilicus much the same as when unwell; it lasts a day or two.

CASE X. *Anteflexion; prolapsed ovary.*— H. C. (Disp. 3,982). Never pregnant. For three years has had on fourteenth day after the beginning of menstruation dull, paroxysmal pain in both groins accompanied by nausea. It lasts two days only and has no discharge. Menstruation is irregular, five weeks to three months, and painless. Patient much improved by sedatives.

CASE XI. *Pelvic organs normal by rectal examination.*— L. K., virgin (Disp. 4,007). Since menstruation began, seven years ago, has had sharp pains in both groins on the fourteenth day; the pain is unlike her cramps with menstruation; it lasts three days only.

CASE XII. *Retroflexion, second degree, adherent; little endometritis, and the appendages apparently normal.*— Mrs. H. (Disp. 4,040). For many months pain over pubes like that of menstruation, only much worse, on the fourteenth day. It lasts only one day and is not accompanied by discharge.

CASE XIII. *Posterior parametritis, with slight retrocession and metritis.*—Mrs. L. (Disp. 4,062). Since the birth of last child ten years ago has had every month a sharp pain on the fourteenth day. The pain is on the left side and exactly the same as when unwell. Leucorrhea is somewhat profuse but never bloody. The pain has not been helped by repair of cervix one year ago. I removed a neglected stitch from the cervix without effect upon the pain.

CASE XIV. *Slight salpingitis.*— K. N. (Disp. 4,108). Married two years; never pregnant; gonorrhea two years ago; no history of much pelvic inflammation. For one year pain in womb and over pubes on the fourteenth or fifteenth days, and at that time passes blood with the feces. No leucorrhea at any time. At menstruation, similar pain but no bloody feces.

CASE XV. *Endometritis.*— K. D. (Disp. 4,189). Syphilis four months. For two months sharp pain on the fourteenth or fifteenth day after menstruation. Pain much like that when unwell, but much worse; great improvement under treatment.

CASE XVI. *Salpingitis, purulent endometritis.* M. G. (Disp. 4,192). Twenty years, one child eighteen months old. Pain on the day after menstruation established. On the fourteenth and fifteenth days from the beginning of menstruation the same pain, associated with an increase in leucorrhea. This pain stops after a few hours.

CASE XVII. *Retroversion.*— Mrs. B. (Disp. 4,186). On the fourteenth and fifteenth days marked discharge but no pain. In this case the discharge disappeared on correcting the displacement and applying a pessary.

CASE XVIII. *Lacerated cervix; endometritis; adherent ovaries; slight retroversion.*— L. (Disp. 4,124). Twenty-eight years. Four children; last eight years ago. Menstruation regular and painful; leucorrhea for years. For several years pain on fourteenth day like that of menstruation. This vanishes after two or three days and is associated with an increase in leucorrhea. I removed with the curette a fair amount of hyperplastic endometrium, and after breaking up the few adhesions that bound down the ovaries, excised a piece of one for examination and suspended the uterus. In the two subsequent months she had none of the customary intermenstrual pain, though menstruation was, if anything, more free than before and still painful. Removed specimen negative.

CASE XIX. *Endometritis; retrocession; chronic salpingitis; prolapsed ovaries.*— M. F. (Carney 393). Twenty-eight. Never pregnant. For three years (that is, since marriage) has had on the sixteenth day from the beginning of menstruation, which is regular and painless, pain in the lower abdomen and right side and leg. This pain is paroxysmal, lasting five minutes at a time for one to three days. There is no increase in leucorrhea.

CASE XX. *Right ovaritis; tender stump on left.*— Mrs. H. (Carney 314). Three years ago left tube and ovary removed for cystic degeneration. A child two years ago. Since the operation, has had every month, about the fourteenth day, pain in back and both sides, coming on suddenly and lasting for two or three days. This is quite different from the discomforts of menstruation.

To these 20 cases of my own I have added 25 more collected from the scanty literature on the subject. An analysis of these 45 cases shows the following facts:

(1) As regards the regularity of the pain, in all it appeared practically every month, except when pregnancy intervened. In 22 the pain always occurred on a definite day, from the beginning of the last menstruation. In 13 there was a variation of two days, and in four of four days. In two, with irregular menstruation, it occurred on a definite day before the next menstruation.

(2) As regards day of appearance, counting from the first day of the previous menstruation, in 20 it appeared on the fourteenth day exactly, in seven it appeared from the twelfth to the fourteenth day, in six from the thirteenth to the fifteenth day, in two from the seventh to the tenth day, in two on the sixteenth day, in one on the fifteenth day, in one on the seventeenth day, and in one on the eighteenth day, menstruation here being five days late. Thus in 41 cases it came from the twelfth to the sixteenth days in 37.

(3) As to its character, in a large number of cases its paroxysmal character was spoken of, the attacks either coming at intervals of several hours and lasting five to fifteen minutes, or else there being constant pain with marked exacerbations, often of the greatest severity, and subjectively much like labor pains. In about half the cases the pain resembles that of menstruation; in the rest it is "entirely different." In nine there was no pain with menstruation.

(4) As to duration, in 10 it lasted two days, in nine three days, in eight one day, and in only four did it last four or more. In most of these it could be inferred that it reached its maximum on the first or second day.

(5) As to seat, in 14 the pain was sharply limited to one side, with fairly regular alternations in two cases (Palmer and Marsh); in 12 it was more general.

(6) As to character of discharge, in none of these cases was there associated with the pain any discharge like that of menstruation, although in two it

was slightly sanguineous. These were respectively cases of easily bleeding fibroids and diseased appendages, with hemorrhagic endometritis; both conditions apt to bleed on the slightest provocation. This lack of characteristic menstrual discharge is the chief reason for objection to the term "intermenstrual dysmenorrhea," as that implies menstruation, and, as I have shown, there is no menstrual discharge, and in more than half the cases the pain is different from that of menstruation. On the other hand, a marked increase of leucorrhea is spoken of in 10, showing a decided temporary congestion. In my third and fourteenth cases there were bloody dejections during the pain.

From this analysis it will be seen that we are dealing with a phenomenon definite in the time of its appearance, character and seat, which is quite unlike premenstrual congestive pain, or the soreness that sometimes persists after menstruation, and lacking the irregularity of ovarian neuralgia.

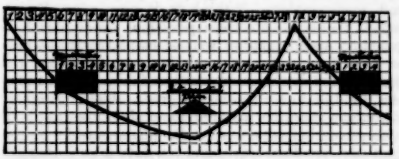
As to the causation of this pain, one might suppose, from its frequent location in the groins, that it is due to some affection of the appendages. While in most of the text-books it is dismissed as "ovarian," it certainly is not always so. Croom had a typical case, in which the pain disappeared after the removal of a hydrosalpinx, although the ovaries were not touched. In Fasbender's case there was no pain after the uterus was curetted, the appendages being apparently normal. My fourth case was a similar one; in my fifteenth case the improvement was measured by that of an existing endometritis, the appendages being normal, and in a case of Benicke a stenosis of the internal os was apparently the only lesion, while in at least one of my cases of fibroids and one of retroflexion the appendages seemed free. On the other hand, in 40 cases in which the local condition is stated I find that there was more or less of an inflammatory condition of the appendages in 30 ("ovaritis" 15, salpingitis 12, hydrosalpinx 3). Whether this preponderance is more that a coincidence demands an examination into the various theories suggested to explain this pain, remembering that a phenomenon associated with so many different conditions cannot of necessity be always due to any one, and remembering further that this proportion of inflammatory cases is not much different from that obtained in any series of gynecological patients.

The theories hitherto suggested may be called (1) the mechanical theory — tubes, ovaries; (2) the neurosis theory; (3) the intermenstrual cycle of congestion theory; 4) the intermenstrual cycle of ovulation theory.

The mechanical theory — applied to the Fallopian tubes — supposes the intermittent emptying of a catarrhal accumulation within the tube, the pain being due to efforts to force the contents of the tube through the closed uterine ostium, under which conditions it might be expected that the pain would be paroxysmal. Examining the cases under consideration, we find that a more or less watery discharge was noticed in four, in two of which a swollen tube had previously been felt. The intermittent character of this tubal hydrorrhea has been explained by supposing that under certain conditions, with the congestion of menstruation, there may be sufficient swelling of the mucosa to produce the temporary occlusion of the tubes with a resulting accumulation of fluid, and that at the time of the greatest uterine quiescence the pressure within the tube becomes sufficient to expel its contents. In only two of these cases was the diagnosis of a hydrosalpinx proved by operation, and at best this theory would apply to but few.

The mechanical theory as applied to the ovary (by Johnston) is that the pain is due to the stretching of adhesions by the shrinking of the pelvic organs, or to the shrinking of the hard parenchyma of the chronically inflamed ovary, due to the ebb of the menstrual congestion, and inferentially assumes that this shrinking is at its maximum midway between the menstrual periods. If this theory were correct it would be but fair to expect that with such hypersensitive ovaries and adhesions, there would also be pain with the congestion that accompanies menstruation, but in nine cases menstruation was painless, and, in fact, in three the patients felt far better during the few days before and during menstruation than at any other time. Furthermore, typical intermenstrual pain was observed in six cases in which the ovaries were freely movable and not sensitive to pressure, and the uterus also was freely movable.

The neurosis theory (Croom, Fasbender, Boulli, Martin) involves ovulation taking place at a different time from menstruation. Assuming that this symptom is generally seen in nervous women, it is held that



"either general irritability of the whole system, or a hypernervous condition of the ovary due to local causes, may produce a discharge of nervous impulses in that organ sufficient to cause the painful bursting of a follicle." While it is possible to assume that in a nervous woman various factors might produce irregular ovulation, this theory does not explain why this discharge of ova should always take place just midway between the menstrual periods, and applying it to the cases under consideration I find only a few of them are spoken of as neurotic. Two of my cases, for instance, were phlegmatic to a degree, and totally without nervous hyperirritability, either general or local, and even in the cases called neurotic it may well be questioned whether the broken-down nerves were not the result rather than the cause of the pain.

The theory of an intermenstrual cycle of congestion assumes that the Stephenson wave is dicrotic, so to speak. It will be remembered that according to the careful observations of Stephenson there exists in normal woman a monthly wave of vital energy, of which regular and demonstrable fluctuations of temperature, pulse pressure and amount of urea excreted are the measures. Menstruation does not correspond with the apex of the wave, but occurs five or six days after the decline has begun. Starting at about zero on the first day of menstruation, the wave descends with a fairly regular curve, reaching its lowest point

at about the fourteenth to sixteenth day, then rising until it reaches its maximum on the twenty-fourth, with a rapid subsequent drop again until it reaches par on the day that the next menstruation begins. Now this wave of vital energy, according to Stephenson and Mary Putnam Jacobi, shows sometimes secondary fluctuations, and it has been assumed by certain writers — unfortunately without as yet definite experimental demonstration — that there exists a definite intermenstrual wave — that the Stephenson wave is one of double rhythm, the second beat giving a certain amount of congestion, but not being of sufficient force to compel a discharge of actual blood.

While the large number of cases in which there was an increase of the amount of leucorrhea, even sometimes tinged with blood during the prevalence of the pain, shows that at this time there may be a certain amount of pelvic congestion, the theory that the pain is of necessity due to such a congestion cannot be maintained, for the simple reason that many of these cases had no pain at all when really menstruating, a time when there is certainly much more congestion than at any intermenstrual secondary wave, and, furthermore, the intermenstrual pain and that associated with menstruation was generally of totally different character. In many other cases there was with the pain no increase of leucorrhea, such as would follow much congestion of the pelvic organs.

The intermenstrual cycle of ovulation theory brings up the old question of the synchronism of ovulation and menstruation. I think it is now generally accepted that while a certain period of every month — generally approximating that of menstruation — may be regarded as that of ovulation *par excellence*, the ripening and discharge of ova is a fairly constant process, though to a much less degree. These irregular ovulations must be inferred to explain the cases of conception that sometimes take place outside of the limit of "five days before and ten days after" that are avoided by the Malthusian husband. Ovulation is, at least, helped by a congested condition of the ovary. We have seen that in many of these cases there is an increased congestion of the uterus as measured by the amount of leucorrhea, and therefore presumably of the ovaries, and what more likely, according to this theory, than that the intermenstrual secondary wave of the preceding theory, due on the thirteenth to fifteenth of the menstrual mouth — counting from the beginning of menstruation, which is the nineteenth to twenty-first of Stephenson's wave, the climax of which precedes menstruation by a week — should be of sufficient force to cause ovulation to take place. The resulting pain would be due to the incarceration of the growing follicle or to the discharge of ova through the chronically inflamed capsule of the gland. Indeed, Marsh goes so far as to formulate the theory that the process of ovulation occurs every twenty-eight days, but that it is normally removed from that of menstruation by an interval of fourteen days, and that ordinarily it occurs in each ovary alternately. This cycle of ovulation is revealed to us, according to him, in the pathological cases by the pain caused by the dehiscence of the follicles, while under normal conditions ovulation would not be manifested by any appreciable signs. In the first place, this theory runs contrary to the experience of mankind that coitus is most apt to be fruitful in the few days closely following menstruation. I am unaware of any observations from the days when so-called "cystic degenerated" but functionally active ovaries were sacrificed so recklessly that show that ovulation was especially active in any large proportion of cases in which they were removed in the middle of the month. If it is true that intermenstrual pain be due to ovulation occurring in chronically tender ovaries, if ovulation normally occurs fourteen days after menstruation, there should be vastly more cases of intermenstrual pain, considering how numerous such ovaries are. To be sure, occasional cases seem to bear out this periodic intermenstrual ovulation. In an ovary I recently removed on the fourteenth day I noticed a follicle that was within a few hours of rupture, but I question very much whether such coincidences are not to be explained by the fact that ovulation may be taking place at any time. As I have stated, a hasty macroscopic examination of the ovary removed in Case III, three days after the pain, showed no sign of functional activity, while the section of the ovary removed in Case XVIII gave the same result.

That the ovaries function alternately must be regarded as merely a theory until shown to be a fact, in spite of the somewhat striking alternation in the seat of the pain in the cases of Marsh and Palmer. In my own experience, when examining healthy ovaries in the course of abdominal work, they generally seem in about the same condition macroscopically on the two sides, which would hardly be expected were one active and the other resting. As bearing very strongly against March's theory of alternation, I would cite my third case, in which intermenstrual pain occurred every month, sometimes on one side and sometimes on the other, although one ovary had been removed a year previously. Finally, as against the theory that this pain is due to painful ovulation, I refer to the numerous cases in which the ovaries were apparently perfectly healthy, and to the two cases in which the pain disappeared after the uterus was curetted.

As possibly throwing some light upon the subject, I would offer the following theory, which for want of a better name I call the "awakening of menstrual activity" theory. The intermenstrual pain coming about the fourteenth day from the beginning of menstruation, the nineteenth after the climax of Stephenson's wave, occurs just about the time the pressure line has reached its lowest point. Cannot then the intermenstrual wave, if one exists, be one of preparation rather than of subsidence, a nervous explosion, so to say, as if nature were waking up with a more or less violent effort to make ready for the coming activity, whether menstrual or ovarian? We have seen how for nearly three weeks the wave of vital energy has been running down hill and the system has, as it were, got into a rut. Nature suddenly says this decline *must* be stopped, and in the readjustment of forces that ensues as the human machine begins to work again with greater energy, it is not to be wondered that there should be groaning from some of the machinery, which, however, after a day or two finds its bearings again and then works automatically and in silence. This theory would not be incompatible with the fact that this pain occurs under such a variety of pathological conditions, ranging from simple endometritis to pyosalpinx and fibrosis. The pain does not of necessity come from any one organ, but from whatever organ is the most irritable or diseased, will come the loudest protest at the sudden arresting

of the comfortable vital decline. A case of Sorel's shows well how this pain has more relation to the coming menstruation than to the previous one. The pain was always fourteen days before the next menstruation, although this came at very irregular intervals. This case was observed through 147 periods. I have found but one case in which the relation between pain and the previous menstruation was absolutely positive (my tenth). Here menstruation, occurring at intervals of five weeks to three months, was always followed on the fourteenth day by sickening paroxysmal pain in both groins, lasting two days and unattended by leucorrhea. I regard this case as merely the inevitable exception for which some other explanation must be sought. Both Priestly and Palmer have spoken of the possibility of intermenstrual pain having some relation with the coming menstruation, but offer no explanation of what this relation is.

LITERATURE.

Addinsell. British Medical Journal, 1898, i, 692.
Benicke in Fasbender.
Croom. Lancet, 1895, ii, 1,625.
Fasbender. Zeitschrift f. Geb. und Gyn., 1875-76, 125.
Jacobi. Rest for Women.
Marsh. American Journal of Obstetrics, 1897, 64.
Priestly. British Medical Journal, October 19, 1872.
Sorel. Quoted by Croom.
Stephenson. American Journal of Obstetrics, xv, 387.

TREATMENT OF CANCER OF THE CERVIX OF THE UTERUS COMPLICATED BY PREGNANCY.[1]

BY GEORGE BEN JOHNSTON, M.D., RICHMOND, VA.

If I am correct in interpreting the motive of our excellent host in inviting me to be present at this meeting of your honorable body, as an expression of his desire to afford me the opportunity of enjoying his hospitality and your good-fellowship, and not as dictated by those considerations which vanity might suggest, then this paper is to be regarded as scarcely more than a mere formality — a passport entitling me to entrance upon these coveted pleasures.

I have selected the subject announced in the title as one in which obstetrician and surgeon must be alike interested. In view both of the increased gravity of cancer of the cervix of the uterus when complicated by pregnancy, and of the many considerations which must, in most instances, be taken into account in deciding upon the proper treatment, there is probably no class of cases which demands greater accuracy in observation, wisdom in interpretation, and skill in management. It has, therefore, been somewhat of a surprise to me to find the question so briefly and unsatisfactorily dealt with in the treatises at my disposal. This was one consideration which influenced me in the selection of this subject.

Aside from this, the subject seemed to me a most suitable one for this occasion. The condition whose treatment constitutes the subject of this paper presents itself to the obstetrician and to the surgeon in slightly different lights, — due to their respective points of view, — there being just that shade of difference which is conveyed by the terms employed by each in referring to this condition. To the obstetrician it is pregnancy complicated by cancer; to the surgeon it is cancer complicated by pregnancy. To the one, a normal physiological process assumes a new phase from the advent of a serious pathological condition; to the other, a pathological condition always grave, but by no means hopeless, is rendered far more serious by the existing physiological condition. In the solution of the problem presented the one considers what measures are demanded by the invasion of the pregnant uterus by a malignant neoplasm; the other, what modification of the procedures regularly indicated in the treatment of a malignant tumor of the cervix must be made when the invaded organ contains a more or less completely developed human being. From these considerations, therefore, it would be natural to predict that the obstetrician would be inclined to defer operative intervention to a later date than would the surgeon, and that the surgeon, on his part, would be disposed to grant to the interests of the unborn child less consideration than would the obstetrician.

But the gravity of these cases is such as to demand that in deciding upon the course of treatment each phase of the case should be accorded its proper significance, unbiassed by the dicta of any specialty. The position in which I am now placed, as a surgeon addressing a society of obstetricians, seems to me peculiarly adapted to the endeavor to formulate for the handling of these cases certain general impartial rules, in which full justice shall be done to the claims of both mother and child. Ignoring the questions of etiology, pathology, symptomatology and diagnosis, let us assume that we have before us a case presenting the condition under discussion. What method of procedure are we to adopt when this fact has been ascertained?

Fortunately, conception rarely takes place in the presence of cancer of the cervix of the uterus, the very nature of the disease almost precluding its occurrence. The onset of the cancer, then, is usually subsequent to conception. Since this lesion is most common in women who have borne one or more children, its earlier symptoms are quickly recognized by them as a departure from the course of former pregnancies; alarm is excited, and advice promptly sought. This results in an early detection of the malady.

Because the course of cancer of the cervix when complicated by pregnancy is more aggressive than otherwise, and for other cogent and obvious reasons, its management demands special consideration. In this consideration we are to take into account the precarious condition of the child, which rarely goes to the full term of intra-uterine life; the constant dangers which beset the woman from hemorrhage and infection; and, finally, at labor, rents which may extend into the peritoneum and lead to fatal peritonitis; or, should the uterine canal be occluded or rendered incapable of even moderate dilatation, there is the possibility of rupture of the uterus, on the one hand, or, on the other, the impossibility of terminating the labor without resorting at last to surgical procedures. Nor should the grave question of the rights of the unborn child be overlooked.

From the above considerations it is manifest that the well-established principles governing the treatment of cervical cancer in general must be modified when pregnancy exists. Our method of procedure will be influenced by a number of factors, chief among which are the extent of the lesion and the stage of pregnancy. On this basis we may divide these compli-

[1] Read before the Obstetrical Society of Boston, January 16, 1900.

cated cases into three groups, each having its own indications for treatment:

(1) Those cases in which the cancer appears before the termination of the fourth month of pregnancy and remains limited to the cervix.

(2) Those in which the disease is discovered after the fourth month and remains limited to the cervix.

(3) Those in which, regardless of the stage of pregnancy, the disease has extended to the vagina, and possibly neighboring structures, rendering the condition inoperable.

With our cases thus classified, two prominent points are to be noted: (1) In the first and third groups the indications for treatment are apparent, positive and constant, as contrasted with the second group, in which our method of procedure is variable and can be arrived at in each instance only after intelligent judgment, founded upon the consideration of numerous details. (2) While possessing the above point in common when contrasted with the second group, when compared with each other we find that our first and third groups are exactly opposite in the result sought and in the method of their management. For this reason the indications for treatment can best be brought out by departing from our order of enumeration and considering the third group immediately after the first.

The treatment of the first group of cases — those in which the cancer appears before the termination of the fourth month of pregnancy and is limited to the cervix — is apparent. At this early stage of pregnancy no thought of saving the life of the child can be entertained, and our sole consideration must be the welfare of the mother. We are, therefore, to proceed exactly as we would in dealing with a cervical cancer in a non-pregnant uterus. Hysterectomy is to be promptly performed, preferably by the vaginal route. Usually at this stage of pregnancy the uterus can be easily removed *per vaginam*. Should the calibre of the vagina, or the existence of some other obstacle, not admit of this method, total hysterectomy by the high route must be resorted to.

In the third group of cases — those in which, regardless of the stage of pregnancy, the disease has extended to the vagina, and possibly neighboring structures, rendering the condition inoperable — the indications, while equally as obvious as in the first group, lead to the adoption of exactly an opposite course, and our efforts are entirely in behalf of the child. The disease having reached an inoperable stage, it is likely that the pregnancy is well advanced, except in those rare cases in which the cancer existed prior to conception. In either case the outlook for the mother is utterly hopeless. Our endeavor here must be to sustain her until the end of term, if possible, or at least until the child has reached a viable age. During this time it is essential that she be kept under the closest surveillance; for, in spite of our efforts, intervention may be demanded at any moment on account of exhaustion or hemorrhage or to forestall premature expulsion. If we are successful in carrying the woman to term, delivery then by the natural channel is fraught with such formidable dangers — laceration, hemorrhage, infection, with peritonitis — that Cæsarean section should always be resorted to as less perilous. Should delivery before term be unavoidable, on account of the exigencies above mentioned, Cæsarean section should be performed where there is the slightest chance of securing a viable child, and it is also the only method to be adopted prior to such time, if it be apparent that the passage of even an undeveloped fetal head through the diseased cervix would end in fatal hemorrhage or a poisoned wound of the peritoneum.

Our course in dealing with each of the two classes of cases thus far considered was clearly indicated by the conditions, and the unavoidable sacrifice of a life in each instance left us unhampered in our efforts to rescue the other — the mother in the first group, the child in the third. Coming now to the treatment of the cases included in the second group of our classification, — those in which the disease is discovered after the fourth month and remains limited to the cervix, — the conditions are more complicated and demand more serious consideration.

Here we recognize the possibility of accomplishing that most desirable object, the saving of the lives of both mother and child, and our efforts should be directed to that end. With these cases our course should be to keep the woman under the closest observation for a time and subject her to frequent examinations. If it is evident, after several inspections, that the disease is progressing with such rapidity that it will advance to an inoperable stage before the child has reached the period of viability, the possibility of saving both lives no longer exists, and the child's life must be sacrificed. Immediate ablation of the uterus is now demanded. In this class of cases the supravaginal route is chosen, and the operation is a Porro, continued to complete extirpation.

If, on the other hand, we find the disease to be progressing but slowly, so that it is plain that the mother's cause will not suffer materially by a few weeks' delay, postponement should be recommended. Should we thus feel justified in deferring operation until the completion of the seventh month, or later, if possible, Cæsarean section, followed by complete removal of the uterus, may result in the rescue of the child, and at the same time accomplish for the mother all that could have been hoped for from an earlier operation. The necessity for the practice of this plan grows more imperative as the case approaches the end of the normal period of gestation, so that it becomes a plain duty to give to the child, after it has reached the time of probable viability, as many days of intra-uterine life as may be consistent with the safety of the mother.

The responsibility in this class of cases is especially serious. Though at no period of gestation is the life of the fetus to be lightly considered, or sacrificed save from the conviction that the step is necessary for the rescue of the mother, yet the claims of the child upon us grow more pressing as fetal life advances. On this account the mother should, and usually will, take some hazard upon herself for the sake of her unborn offspring.

I wish to append a report of three cases of cancer of the cervix, complicated by pregnancy, successfully treated by operation. Two of these were of the kind described in the first group of our classification, and the other belonged to the second. They are briefly as follows:

CASE I. Mrs. P., referred by Dr. Devany, of Wakefield, Va., consulted me July 29, 1897. Age twenty-six, married seven years. Two children; youngest four years old. Dates her trouble from birth of last child. At this delivery a laceration was

produced. Ever since has had more or less trouble, such as bearing-down pains, backache, vaginal discharge, sometimes severe itching of external parts. Is now and then melancholy and nervous. All symptoms increased during menstruation.

Menstruation, which had been regular, did not appear the middle of May as expected. The ordinary signs of pregnancy developed in proper order. Believing herself pregnant she was mystified by a constant bloody discharge, on account of which she consulted Dr. Devany. Examination revealed a three and a half months' pregnancy. The cervix was occupied by carcinomatous growth involving nearly the entire vaginal portion. Microscopical findings verified the diagnosis and immediate operation was proposed.

Because of the extensive deposit abdominal panhysterectomy was advised, and accomplished on August 5, 1897. Her recovery was quick and easy and she left the Old Dominion Hospital on September 3, 1897.

A recent examination of this patient shows her in perfect health.

Case II. Referred by Dr. John T. Graham, of Wytheville, Va., and operated on in his private sanitorium. Mrs. H., age thirty-eight years. Has had five children and two abortions in nine years. Youngest child two years old. Consulted Dr. Graham June 17, 1899. He found a large bilateral laceration of the cervix, which occurred at her first delivery. Had phlebitis in both legs after birth of last child. Dr. Graham found the cervix much enlarged, with great eversion of lips. Menstruation had not been regular, and was now several weeks overdue. Medicated tampons were used to reduce size of cervix with a view to performing trachelorrhaphy. Treatment availed nothing. Points of induration began to break down. Rapid ulceration took place and the true character of the disease was quickly made out. Cancer of the cervix was diagnosticated, and on July 16th I saw the patient with Dr. Graham, and on the following day complete abdominal hysterectomy was performed. The progress of her recovery was satisfactory until the fourth week after operation, when she developed phlebitis of her left leg and likewise suffered an acute congestion of the kidneys. Her recovery from this point on was tedious. Finally all symptoms subsided, and she is now entirely well.

Case III. Mrs. B., referred by Dr. J. P. Haller, of Pocahontas, Va., January 17, 1898. Is twenty-four years old, married six years, one child five years old. Has suffered more or less ever since the birth of her baby.

Dr. Haller says of her in a letter dated January 9th: "She has suffered greatly at menstrual periods. Menstruation ceased five and one-half months ago; since this time uterus has steadily enlarged. Os hard to reach by examining finger. Through a speculum observed bilateral rent. Anterior lip much enlarged but smooth; posterior lip everted and covered with granulations, which bleed on slightest touch." I examined this patient January 17th and found all that Dr. Haller has described. A diagnosis of cervical cancer complicated by pregnancy was given. This was verified by the microscope.

In view of the facts that her general health was superb, the disease was just beginning around the os and was limited to a very small area, and that the pregnancy had advanced to the middle of the sixth month, it was determined to postpone operation, hoping to rescue the child later on. Dr. Haller kept a close watch on her until March 13th, when she returned to the Old Dominion Hospital. It was plain that the disease had made advance, and as the child was considered viable, being now well on into the seventh month, Cæsarean section followed by complete extirpation was done on March 22d. The child was extracted alive and received the rite of baptism immediately on its removal. It survived two and one-half hours.

This patient made an unusually easy recovery, and returned to her home, four hundred miles away, on May 3, 1898. I had opportunity to examine her August 18, 1899, and found her absolutely well.

THIRD INTERNATIONAL CONGRESS OF OBSTETRICS AND GYNECOLOGY, HELD AT AMSTERDAM, AUGUST 8-12, 1899.[1]

BY GEORGE J. ENGLEMANN, M.D., BOSTON.

It seems late in the day to dwell upon the International Congress of August, 1899, and yet I take pleasure in presenting to you, at the request of our President, such of the more striking features of this great gathering of gynecologists as I may now recall.

The attendance was large, some 200. Many governments and national societies were represented, and papers so numerous that it was repeatedly necessary to separate into an obstetrical and gynecological section to accomplish the work planned. French, of course, predominated by reason of the close proximity of France and Belgium. Pinard, Richelot, Doyen, Jacobs, Reverdin, of Geneva, the previous president, and others equally able, added much of interest to the meeting. The English were few in number. Among them were men we love to honor, such as Robert Barnes, Simpson, Alexander, of Edinburgh, Sinclair, of Manchester, and leaders such as these. Our own country was well represented by a membership of 27: Baldy, Edebohls, Fry and King, of Washington, Davis, of Philadelphia, Gordon, of Maine, Palmer Dudley, of New York, Reed, of Cincinnati, Carsons, of Detroit, and others, who took an active part in scientific discussions and business transactions as well, owing in a great measure to the organized and harmonious action of the American delegation.

The absence of the Germans was much regretted, although in no way did it interfere with the interest and success of the Congress. The unfortunate discussion which arose some years ago between Martin, of Berlin, and Treub, of Amsterdam, the President of the Congress, who had mildly objected to the introduction of foreign elements into the faculties of Dutch universities where native talent was available, had become so acrimonious and had so aroused the national feeling of the Germans that no one attended, with the exception of my good friend Ziegenspeck, of Munich, and even those who were to take part officially in the opening of discussions as *rapporteurs*, whose papers had already been distributed in printed form, did not appear, although the feeling was against Treub the *Dutch professor*, and not against Treub the *President of the Congress*; it was a purely personal

[1] Read before the Obstetrical Society of Boston, January 16, 1900.

matter, and will in no way influence the position of German gynecologists with regard to the next Congress, in which, I already understand, they will take active part.

As is usual at such large gatherings, nothing absolutely new was presented. The anastomosis forceps of La Place, of Philadelphia, were well received. Robert Bell, of Glasgow, detailed his very successful results in the treatment of uterine cancer in its early stages by thyroid ingestion, and reported favorably on the use of the parotid and mammary gland extracts in uterine and ovarian disease. Goldspohn, of Chicago, explained his combination of the Alexander operation with inguinal celiotomy through the dilated internal ring, for the breaking down of uterine adhesions and other minor interferences, a proceeding which will hardly find general favor by reason of the inherent danger of hernia. Doyen endeavored to impress the advantages of his angiotribe, which dates back to 1897, the Moscow Congress unnecessarily bringing before the meeting his claim of precedence over Tuffier. The cautery clamp of Skene found a warm friend and advocate in Jacobs, of Brussels, who presented it as a much more serviceable instrument than the clumsy angiotribe. German instruments of similar construction, the *Hebelklemme* of Thumin and the *Brennklemme* of Winter, did not appear.

The subjects officially presented for discussion were: *Gynecological:* (1) "The Operative Treatment of Fibroids"; (2) "The Relative Value of Antisepsis and Perfected Technique in Practical Results of Operative Gynecology." *Obstetrical:* (1) "The Influence of Posture on Form and Dimensions of the Pelvis"; (2) "The Indications for Cæsarean Section with Reference to Symphyseotomy, Craniotomy, and the Induction of Premature Labor."

Interest centered in the question of the operative treatment of fibroids, some 44 having inscribed their names to take part in the discussions, which were opened by Baldy and Doyen. Schauta, one of the *rapporteurs*, was not present, but his conclusions as they appeared in the abstract merit consideration. He says: (1) Operate only if the tumor causes disturbances *which cannot otherwise be overcome;* (2) total vaginal hysterectomy he looks upon as the safest and easiest, if the tumor is not above the navel and easily pressed into the pelvis; (3) abdominal section for more or less immovable and partially intraligamentous growths; (4) the supravaginal amputation, with intraperitoneal treatment of pedicle, he still adheres to as yet more safe than total hysterectomy, though not so satisfactory in final results; considers it valuable as an emergency operation; (5) enucleation whether by the vaginal or abdominal route is no safer than extirpation; (6) castration; (7) curettement hardly to be considered; (8) the clamp he looks upon as possessing no advantages over the ligature, but often useful in emergency. The propriety of removing the ovaries is questionable, as the unpleasant sequences are not done away with by leaving the organs. If left the symptoms appear at once; if removed they come somewhat later.

The conclusions of Doyen may likewise be of interest by reason of the prominent position he now takes. He resorts to the vaginal operation if the case seems an easy one; to abdominal laparotomy if difficult. Abdominal myomectomy he rarely performs; for large multiple interstitial growths he believes total abdominal hysterectomy with closure of the peritoneum most advantageous.

In the active and interesting discussion which followed, participated in by so many able surgeons from all quarters, almost every one presented some deviation, some method of his own with its peculiar advantages, and I may prominently mention Jonnesco, the brilliant young Roumanian, professor of surgery in Bucharest, whose method of bringing together the abdominal walls with coaptation of layers, without buried sutures, is most ingenious, always using metallic suture, silver, or preferably bronzed aluminum.

After the close of the afternoon session we were given an opportunity to see a demonstration of the kinematograph as a practical aid in medical instruction and record by Doyen, who has certainly utilized this wonderful instrument to its utmost and presented a series of marvellously perfect living pictures showing his various operations — a removal of the kidney in four minutes, operation on the brain in six minutes, etc. Technically, the demonstration was perfect, but it hardly seemed appropriate when upon a continuance of these attractive pictures, after the close of the session upon the following afternoon, numbers of ladies and children swelled the crowd who had gathered to see the show, and the Secretary-General, Dr. Jacobs, very justly insisted upon having the hall cleared of those whom curiosity had attracted, before the display was permitted to begin. In his operations, performed at the private hospital of Dr. Mendes de Leon in the early morning, so as not to interfere with sessions, he did not display the same rapidity, though it is not just to judge the operator working amid strange surroundings, and at the same time endeavoring to demonstrate his method, but it is that which does not appeal to us — the crushing of tissues with the heavy angiotribe, with its hundreds or thousands of pounds of pressure, and then the ligature in addition, of course an *en masse* ligature, although the crushed tissues were hardly thicker than a strip of parchment. Not one of the patients recovered. At Moscow he was equally unfortunate, I understand, every one of the five operations performed during the session of the International Congress in 1897 terminating fatally. Of three upon whom he operated in Edinburgh, at the meeting of the British Medical Association, one recovered. The Amsterdam cases, his assistant told me later, had been, before operation, in the same room with a patient suffering from tetanus.

Reynier, of Paris, discussed abdominal hysterectomy for cancer in a very able manner, and I mention the fact more especially because it is interesting to see how the American method has assumed prominence, even here where the vaginal operation until recently has been supreme for malignant disease, and quite a strife is now being waged among French surgeons by the various claimants for precedence in this operation, whilst, as far as I can recall, it was Jacobs who first drew attention to the advantages of the abdominal route, after a careful study of the work of American operators.

The influence of posture on shape and diameters of the pelvis was presented by Bonnaire, of Paris, and Bué, of Lille; Pinzano, of Pisa; Lebedoff, of St. Petersburg, and Walcher, who unfortunately, like all the German *rapporteurs*, was absent. A most careful study of the subject has been made, and of extreme interest were the series of experiments made to

determine with precision the variations in size and shape of the pelvis in different positions: in the cadaver, the elasticity of the tissues least, a somewhat greater yielding in the living non-pregnant subject, and greatest in the pregnant and parturient. It is clearly demonstrated that the suspended or Walcher position enlarges the pelvic inlet, whilst it narrows the outlet; *vice versa* a lithotomy position widens the outlet and narrows the inlet.

These facts thus scientifically demonstrated were corroborated by clinical evidence, by successful cases in which delivery had been accomplished in the suspended position where forceps and possibly symphyseotomy would otherwise have been called for.

To Walcher unquestionably belongs the credit of first demonstrating the possibilities of the method, of giving it a scientific foundation and likewise of practically applying it; yet there are some unwilling to allow this, who still refer to the now famous illustrations of Mercurio and Melli, who, in the Middle Ages, pictured a similar position to facilitate the examination and delivery of very fat women. If any reference is made in Mercurio, and in a rather hasty examination I have not found it, of the adaptation of this position to difficult labor from other causes, it is but incidental and can never be compared with the precise and scientific descriptions of Walcher. Such a position has, however, actually been in use for ages in cases of retarded labor, though hitherto neither understood nor appreciated by the obstetrician, and by the way, the only truly suspended position, the one resorted to by primitive peoples, which was first described and pictured in my book on labor in 1882. It is historically interesting, and, like many other of the practices of primitive peoples, presents some points for serious consideration; this actual suspension possessing the advantage of mobility over the fixed Walcher position, thus admitting of the shifting of the pelvic axis and a variation of position with the advance of the head, a point of very decided importance when we consider the narrowing of the pelvic outlet by the Walcher and its widening by the lithotomy position, which must of course follow as labor progresses, if it is to be facilitated in all its stages.

It is interesting to note that Pinard, the warm advocate of symphyseotomy, objects very decidedly to this awkward position, which, I must say, cannot be well adapted to present conditions and to modern obstetrics, however satisfactory it prove. He was one of those who opened the discussion upon the Cæsarean section as compared with craniotomy, symphyseotomy and the induction of premature labor, and spoke of symphyseotomy as distinctly an easy operation. A most fluent, eloquent speaker, always interesting, with an enormous material at his command. He strongly emphasized the importance of discontinuing in our obstetrical practice, (1) the induction of premature labor, as at least 30 per cent. of the children are lost; (2) forceps and version in retarded labor due to resistance of head by bony parts of pelvis; (3) embryotomy on the living child.

The arguments of other speakers rather favored Cæsarean section, as constrasted with symphyseotomy, allowing to each, however, its proper field; the statistics of Leopold and Olshausen were referred to, with a mortality of from seven to eight per cent., expunged 5.8 per cent., Zweifel being quoted with 1.7 per cent. only.

There was much to interest the surgeon in the discussion of the second gynecological topic, "The Relative Bearing of Antisepsis, and the Improved Technique in the Recent Results of Gynecological Operations."

Richelot made a very excellent point, that details of execution decide the question, dexterity with judgment, the combined use of dextrous hands and good common sense, and that antisepsis in unison with improved technique is paving the way for true conservative surgery. He rather disparaged the gloves, shaved face, and the mask now in favor with Germask, and dwelt upon the far greater importance of rapid operation, with brief exposure of tissues and a minimal loss of blood.

Bumm looks upon antisepsis as simple of attainment, that this we have accomplished, that technicalities are difficult and that we have technique, now neglected for antisepsis, yet to learn and to perfect.

The Congress was well managed, without unnecessary red tape, and work was pleasantly relieved by social evenings, luncheons, dinners, and most interesting excursions to Scheveningen and on the winding water ways to the old Dutch town of Edam, with a sail on the quaint medieval boats of the herring fleet of Volendam to the Island of Marken. It was on a Sunday, and everywhere we were greeted by the entire population in their attractive costumes, still adhered to by man, woman and child, and strikingly different in every one of these places. Among the many pleasant recollections of this meeting not the least is the charming hospitality of our Amsterdam friends, which gave us a glimpse of Dutch life rarely granted the stranger.

The International Committee has now definitely accepted the invitation of the British Gynecological Society and the next Congress is to take place in London, 1902. The American National Committee appointed by the American delegation at Amsterdam is: Drs. Engelmann, Boston, Chairman; McMurtrie, Louisville; Reed, Cincinnati; Whitridge, Baltimore; Dudley, New York, Secretary.

GUNSHOT WOUND OF THE ABDOMEN, WITH MULTIPLE WOUNDS OF THE INTESTINE.[1]

BY HOWARD A. LOTHROP, A.M., M.D., BOSTON,
Assistant Visiting Surgeon, Boston City Hospital and Long Island Hospital; Assistant in Anatomy, Harvard University.

The following patient came under my care on the service of Dr. George H. Monks, at the Boston City Hospital, and I am indebted to his kindness for the privilege of reporting it. J. T., colored, thirty-one years of age, was brought to the accident room of the Boston City Hospital just before midnight on August 7th, with the history of having been shot in the abdomen. He was perfectly conscious and it was learned that he had been shot at very close range, and that the weapon was a revolver of 32 calibre. He entered the hospital about one hour after his injury. He had been eating and drinking during the evening, but was not intoxicated.

Inspection showed a man of medium height and muscular. He was restless, and was complaining of great pain referred to the abdomen. The mucous

[1] Read at a meeting of the Surgical Section of the Suffolk District Medical Society, January 3, 1900.

membranes of his lips and conjunctivæ were rather pale and he was perspiring freely. His pulse was 80, regular, of fair strength, but not of full volume. His respiration was slightly increased and was costal rather than abdominal. The abdomen was only slightly distended, but the muscles were perfectly rigid, and there was extreme general tenderness, which made palpation of little value. On percussion the abdomen was everywhere tympanitic except in the flanks, where there was a suspicion that more than the normal dulness was present. About three inches above the anterior superior spine of the left ilium was a nearly circular, finely ragged wound, somewhat less than a quarter of an inch in diameter. There had been only slight hemorrhage from this wound, which was apparently free from shreds of clothing, and it had allowed nothing to escape from the abdomen. There was no other bullet wound to be found, nor was the bullet to be discovered subcutaneously. There was no direct evidence by which the direction of the bullet could be determined, although it seemed obvious that certain of the abdominal viscera had been injured. The wound was not probed. The patient had not vomited, nor had his bowels moved since the shooting, so that the question of blood in the stomach or lower bowel could not be determined. He was catheterized and a normal urine obtained.

The nature of his injury was explained to him and an immediate celiotomy was performed under ether narcosis, two hours having elapsed since his injury. A median incision five and one-half inches long was made, extending from just above the umbilicus nearly to the os pubis. The peritoneal cavity was everywhere filled with blood and clots, and the streaks of bright blood showed that hemorrhage was still going on. On everting the left abdominal wall, the wound showing where the bullet had entered the peritoneal cavity was discovered. The skin and the peritoneal wounds were so placed as to show that the wall had been penetrated obliquely, and the projection of a line connecting these two points showed that the course of the bullet was directed downward and to the right toward the true pelvis, which contained much blood and was evidently the source of fresh hemorrhage. Exploration showed that the bullet had entered the right true pelvic wall and fresh blood was rapidly coming through the wound in the pelvic fascia. Without further exploration of this wound it was packed with gauze and the hemorrhage easily controlled. The abdominal cavity was then carefully irrigated with copious amounts of warm salt solution and the free blood and clots removed, and there seemed to be no further source of alarming hemorrhage.

During this procedure it was observed that the intestines were markedly collapsed, and wounds in the small intestine had been observed, through which much of the intestinal contents had entered the peritoneal cavity. The bladder was not injured. From the fact that bullets take a straight course through the abdominal cavity it was decided that the only viscera exposed to injury in this instance were the intestines, together with their mesenteries and the great omentum.

Starting from the ileocecal region a systematic exploration for perforations of the small intestine was begun and the first group of perforations was about five inches from the lower end of the ileum. The bullet had evidently passed through a knuckle of the bowel, making four perforations close together and injuring the mesentery. As the gut was nearly severed, enterectomy was performed, thereby removing about six inches of intestine, together with a portion of the mesentery, and the ends united by interrupted Lembert sutures of fine silk. The ends were held in approximation by about six sutures and then inverted and a second row of Lembert sutures applied about three-eighths of an inch apart, particular care being exercised at the mesenteric attachment. About 18 inches further up the ileum was another group of four perforations, which had practically severed the bowels. Here a second resection was performed and the ends united as above. The intestine was then further explored by running the coils through the hands within the abdominal cavity, and at no time were any coils exposed on the surface of the abdomen except those which were wounded and needed sutures or resection. About 10 feet from the ileocecal region was a third group of perforations. There were two circular holes and about four inches distant was a ragged wound about two inches long parallel with the intestine. The mucous membrane was much everted and injected. The small wounds were closed transversely with interrupted Lembert sutures, but the longer wound was sutured longitudinally. No further perforations were suspected, but the search was continued toward the jejunum, and at about the middle of the jejunum another group of wounds was discovered and this coil was pulled down from the left hypochondrium. Here were two pouting circular bullet wounds, which were closed transversely. Near by was a contused area parallel with the intestine and about an inch and a half long, where only the serous coat seemed to be intact; it was of a dark-blue color and very thin. The serous coat was invaginated and sutured longitudinally, thereby constricting the lumen of the intestine somewhat. The rest of the jejunum was intact. The ileocecal region was intact. No wound was found in the descending colon and the transverse colon was above the track of the bullet. A superficial wound of the serous coat of the sigmoid flexure was then discovered and sutured. The bullet had passed anterior to the rectum, which was found to be intact. It seemed evident that no further viscera had been wounded. Manipulation and peristalsis had changed the position of the intestinal coils so that none of the perforation remained along the track of the bullet.

The temporary gauze packing was still in the wound in the pelvic wall, and there was no hemorrhage from any source. This packing was now removed and the wound explored with the finger. The bullet had passed through the pelvic fascia and the obturator internus muscle, and was felt deeply imbedded in the body of the ischium. The sacral plexus was uninjured and the finger in the track of the bullet detected pulsation in the branches of the internal iliac artery. An attempt was made to dislodge the bullet which was ineffectual, as the bullet was deep and firmly imbedded. The wound was deep in the pelvis and these manipulations had started fresh hemorrhages of considerable magnitude, which could be controlled only by packing. On account of the length of time consumed in the intestinal repair, it was thought best to control this hemorrhage by tampon. During the operation the abdomen was irrigated from time to time with hot salt solution, and all fecal extravasation and clots removed as far as

possible. About thirty quarts of salt solution were used for this purpose. At the close of the operation the abdomen was left full of this solution and the upper portion of the wound closed, leaving a small opening below, through which extended strips of gauze into the pelvic fascia to the seat of the bullet.

The duration of the operation was about two hours. As the patient was suffering from shock consequent on the early hemorrhage, infusion of salt solution in the pectoral regions was begun as soon as he was etherized, and three quarts were thus made to enter the circulation. During the operation he received subcutaneously, strychnia, one-fifth of a grain; tincture of digitalis, 48 minims; brandy, one ounce. At the close of operation the pulse was 140, regular, and of fairly good strength and volume, and he was perspiring profusely. He recovered well from his ether and did not vomit. Rectal alimentation and stimulation were begun at once and continued for three days. The stimulant enema consisted of a pint of salt solution and an ounce each of brandy and black coffee; the nutrient enema of two ounces each of peptonized milk and beef juice, one egg, ten grains of pepsin, and five minims of tincture of opium. These enemata were given alternately every four hours. The lips and mouth were moistened occasionally, and he was allowed small pieces of cracked ice sparingly.

Eight hours after the operation, the pulse was 120, and he was recovering from his shock. He remained quiet and made no complaints during the day. His urine was removed by catheter for the first forty-eight hours.

August 9th. Patient was very comfortable. Temperature 99.5°, pulse 90; abdomen soft and not tender; no vomiting; bowels moved by a cleansing enema.

August 10th. Comfortable. Temperature 100°, pulse 95; normal movement of bowels.

August 11th. Liquids by mouth in drachm doses. Highest temperature this P. M. was 101.8°, pulse 92.

August 12th. Convalescing without particular incidents. Temperature 99.5°, pulse 78; abdomen lax, not tender. Two of the four original strips of gauze removed, followed by moderate hemorrhage which stopped at once on the insertion of a third strip.

August 14th (one week after operation). Convalescence uninterrupted. Liquid diet continued; bowels moving regularly, about twice daily. The original gauze strips were removed to-day; not followed by any hemorrhage; fresh gauze packing. Temperature 99°, pulse 76; stitches removed.

August 16th. There was considerable hemorrhage this morning so that the dressing was fairly saturated. The gauze packing was renewed, and the bleeding easily controlled. Patient continues perfectly comfortable, with normal pulse and temperature.

August 17th (ten days after injury). Still on liquid diet and bowels moving regularly, with no signs of leakage at points of suture. Wound healed except at lower end, which is kept open by the strips of gauze for drainage. Abdomen lax and patient perfectly comfortable. During the dressing this morning the gauze wicks were removed as usual, and a single one carefully inserted. For the last few days there has been considerable discharge of a dark color, presumably from broken-down blood clots, but no fecal extravasation. The wound was not irrigated or disturbed beyond the renewal of the wicks. Shortly after the wick was inserted, fresh blood was seen to rise slowly to the surface, and in a moment it welled up with great force and the hemorrhage was alarming. The index finger was at once inserted into the wound directed toward the site of the bullet, so as to serve as a guide, and then several long wicks were rapidly forced into the wound. This procedure was, of course, extremely painful, but was demanded in order to save the life of the patient, and had to be continued boldly, notwithstanding his cries of pain. Meanwhile ether had been called for and administered, in case it should be necessary to renew this packing. No further hemorrhage followed, however, and it was considered best not to disturb this packing.

August 18th. Patient has been much frightened and nervous since yesterday, but suffers no pain. There has been no further hemorrhage, and the abdomen appears normal and not tender. The temperature rose to 101.5° and the pulse to 130.

August 20th. Temperature has reached normal and pulse remains at 100, and patient is very comfortable. Bowels still moving regularly. Diet increased to solids.

August 24th. The gauze tampons introduced for the hemorrhage of seven days ago removed for the first time. There is much discharge of decomposed blood clot, but no fresh blood followed this dressing. The wound was carefully irrigated and fresh wicks introduced. Patient is comfortable, and is on a general diet. Intestinal wounds remain intact and bowels move regularly. Temperature and pulse continue normal.

August 26th. On account of the unsatisfactory drainage with gauze packing and the marked tendency of the abdominal wound to close, a short rubber drainage tube was inserted and the wound irrigated. No further signs of hemorrhage.

August 29th. Convalescence continues uninterrupted. Patient is on full diet, bowels move daily, the pulse and temperature continue to remain normal, the abdomen is soft and not tender, and no further trouble seems imminent.

August 31st (twenty-five days after the injury). For three weeks this patient had been watched very carefully on account of the tendency to hemorrhage, and his life was saved on the tenth day from what would have been a fatal hemorrhage had not proper assistance been at hand. Two weeks had elapsed since this hemorrhage, the patient was convalescing without incident, and no further trouble was anticipated. At 4 A. M. he observed that his dressing was stained with blood, and he found it difficult to speak loud enough to attract the attention of the orderly in charge. The house surgeon was immediately summoned. He found the patient lying on his back and slightly turned on his left side. The dressing was saturated with blood and there was a long pool of blood in the angle between his body and the mattress, extending from the axilla to the knee and about an inch deep. No radial pulse could be detected, and he presented the symptoms of acute hemorrhage. On removing the dressing only a little blood was seen issuing from the wound, but, nevertheless, gauze packing was at once inserted. Immediate infusion and stimulants were resorted to and he rallied feebly, but failed to react very perceptibly to continued stimulation. Eight hours later he was comatose, and he

died fourteen hours after the occurrence of this hemorrhage.

The autopsy was performed by Dr. F. W. Draper forty hours after death, and to him I am indebted for the following facts selected from his full report: "Inspection of the wound showed no source of hemorrhage. Upon internal examination many of the intestinal loops were found firmly agglutinated, the opposing surfaces being adherent to each other and to adjacent organs and requiring some force to separate them. These inflammatory adhesions were mostly confined to the pelvis, and the intestines otherwise were fairly free from adhesions. In the pelvic region, behind the fundus of the bladder, was a limited peritoneal surface, which was red, velvety and blood-stained. Careful search was made for any blood-vessels in this region which could be the source of the hemorrhage, but the search was fruitless. The bullet was found firmly imbedded in the body of the ischium, considerably battered and with its tip presenting. This position of the bullet may account for the large size of the intestinal wounds consequent on a large frontage as it passed along. The obturator internus muscle was much infiltrated with blood, but no evident source of hemorrhage could be detected in this vicinity. There was no peritonitis. At two points (under the spleen and in the left iliac region) pockets of stringy, glairy pus were found, formed by opposed intestinal folds, and containing each about two fluid ounces. These pus collections had thick walls and were quiescent and becoming absorbed. The resection wounds were found well healed and showing no active lesion. At other points in the loops of the small intestine there were puckered areas where sutures, still plainly visible, had brought the edges of the perforating wounds together firmly, leaving some slightly blood-stained tissue as their only active objective remnant of the primary injury. There was no appreciable change in the lumen of the gut. All tissues of the body were exsanguinated."

Gunshot wounds of the abdomen involving the intestines are not uncommonly met with in hospital practice, and the treatment of such cases varies in the hands of different surgeons. Certain facts which are of value in deciding what is best to do in these cases seem to be reasonably established.

Bullet. — (1) All sizes are dangerous to a high degree with slight practical variation. A small bullet may change its axis and thus present a considerable frontage; (2) extent of injury depends, for the most part, upon the direction and power of penetration; (3) the "explosive action" or "zone of lateral expansion" is a factor in wounds caused by bullets of high velocity (rifle), but it is not a factor to be considered in wounds caused by the ordinary pistols and revolvers.

Diagnosis. — There will be one or two external wounds. The course of the bullet is a straight one in the abdomen, hence the direction whence the bullet came, the position of the victim at the time and a knowledge of the regional anatomy are valuable factors in drawing conclusions. Additional knowledge as to viscera injured may be derived from the vomitus, stools, expectoration and urine. The order of frequency of lesions in the abdominal viscera is as follows: small intestine, large intestine, liver, stomach, kidney, spleen and pancreas. Combined lesions are common. The average number of perforations of the small intestine made by a single bullet is from three to eight. The maximum number observed is over twenty.

Dangers. — The dangers are, (1) immediate; (2) remote. The immediate dangers are from shock and hemorrhage. Shock is rarely fatal and its extent is no guide as to the extent of the injury. There is always some hemorrhage and it is often an alarming complication, but is not commonly fatal unless the aorta or some large trunk is severed, when death will follow shortly after the accident. The remote dangers are peritonitis and secondary hemorrhage and are the usual complications resulting in a fatal issue. Peritonitis is the usual sequel to gunshot wounds of the intestine in a large percentage of cases, whether treated expectantly or by celiotomy. Secondary hemorrhage is at present an unusual cause of death in these cases. It is to be feared most during the second week, consequent on the rupture of an eroded vessel or the softening of a thrombus.

Prognosis. — During the Civil War gunshot wounds were treated expectantly, and of all cases the average mortality was about 90 per cent. Of all cases treated at the present time by expectant methods — rest, opiates, etc. — the mortality is about 70 per cent. In a series of 154 cases of gunshot wounds of the intestines, including all degrees of severity, treated by celiotomy the rate of mortality was as follows: Operation within five hours after injury, 52 per cent.; ten hours after injury, 74 per cent.; twenty hours after injury, 74 per cent.; after twenty hours from time of injury, 78 per cent. Operation was generally useless after a general peritonitis had developed.

The prognosis of intestinal gunshot wounds depends upon several factors. The general health of the patient is an important factor. An empty condition of the bowels is a fortunate circumstance, for this reduces fecal extravasation to a minimum. Profuse irrigation is of great value in early cases in order to cleanse the peritoneal cavity before a peritonitis has set in. The only sure means of finding all the perforations is by instituting a systematic search through all of the intestinal coils. Under the most favorable circumstances, a gunshot wound of the intestines is to be considered a grave injury. Given a gunshot wound of the abdomen, an immediate exploratory median celiotomy should be performed. The objects to be gained are as follows: To determine the extent of injury; to avoid fecal extravasation and infection; to stop hemorrhage; to repair damage; to establish drainage if necessary.

Wounds of intestine should be sutured or resected according to circumstances. The search for injury should be systematic and complete, for intestinal wounds are rarely found in the course of the bullet at time of operation. Profuse irrigation with hot salt solution is most desirable in early cases, and may be of value in cases of general peritonitis, but is contraindicated where the peritonitis is localized. The time required in such operations is often necessarily prolonged and the consequent shock is frequently alarming. This condition is to be overcome frequently by the usual saline infusions, enemata and stimulants.

Bequest to a Hospital. — Through the will of the late David Herbert Sweetser, the Lynn Hospital receives a bequest of $10,000. Mr. Sweetser had been treasurer of the hospital since its foundation.

THE PRACTICAL VALUE OF THE WHITE BLOOD COUNT IN SURGICAL CASES.[1]

BY J. C. HUBBARD, M.D., BOSTON.

My object in looking over the surgical records of the Massachusetts General Hospital since early in 1895 has been to ascertain the practical value of the white blood count in surgical cases, and to show of how great or how small an aid it is to the surgeon when dealing with the probabilities of the presence or absence of pus in an individual case. I shall not attempt to go at any length into the scientific side, but shall confine myself as closely as possible to the subject of this paper, "The Practical Value of the White Blood Count in Surgical Cases."

As most interval appendix operations are performed when the patient is to all intents and purposes well, I have chosen the number of white corpuscles in these chronic cases to represent the normal count. Eighty-three cases of chronic appendicitis were counted. As, however, in three of these some pus was found at operation, I have omitted them in computing the normal count. This leaves 80 cases with an average of 9,240, which falls within the limits set by Cabot for the normal count — 5,000 to 10,000. The individual counts in these chronic appendix cases ranged from 4,500 to 18,800. These and the following cases were doubtless counted at various times of day and without regard to meals; therefore, some of them when the blood was taken were probably at that stage of digestion when a digestive leucocytosis is present. Cabot states that 13,000 is as high as it is customary for this leucocytosis to rise. It follows from this, then, that in a certain number of these clean interval appendix cases a definite leucocytosis exists. Three cases, as I have said, had pus, with an average count of 4,350, which is about half as large as that of those without pus. Each of them had the last attack within a month of the operation. Of these 83 cases, one had some slight tenderness with a count of 8,500 and pus, while another with the same slight tenderness but without pus had a count of 13,200, and still another, where the count was 18,800, had no pus.

We can take 9,000 as the normal number for the leucocyte count in a healthy person. Now suppose you see a case of chronic appendicitis, and perhaps find some tenderness or perhaps not, but however it may be, a blood count is made as part of the routine examination, of how much help is it in determining the presence or absence of pus? We are taught to expect pus when the count is high. It may be true on the average, but we are dealing now with individuals. In the hospital cases pus was found when the count was as low as 8,500 and was not found in a case with a count as high as 18,800. This means that pus may be found with a normal count and may not with a decidedly increased count. In other words the blood count is of no particular aid in a number of these cases.

Now to turn to appendicitis during an attack. One hundred and seventy cases were counted. In 113 cases pus was found, and in 57 it was not found. In the purulent cases the average was 18,193, and in the non-purulent 15,550, only a slight difference. The individual counts in the pus cases varied from 8,200, a normal count, to 38,000 and in the non-purulent cases from 6,500 to 32,600. A count, therefore, of anywhere from, roughly, 8,000 to 32,000 is common to either purulent or non-purulent cases. Of the 113 purulent, 105 have a count within this range and of the 57 non-purulent cases 52 come within these limits. So that the count in 92 per cent. of all the cases comes somewhere between 8,000 and 32,000, which range is common to both. Hence in 92 per cent. of the cases the blood count as determining the presence or absence of pus is of no consequence. No especial aid is derived from considering the duration of the attack in relation to the blood count, for on the first day there were various counts ranging up to 23,000 without pus and pus was found in other cases with counts as low as 7,500. So also on the second day there were counts in non-purulent cases as high as 21,600, and in purulent ones as low as 12,700. It might be considered at first sight as though a relative increase or decrease in the number of leucocytes as the disease progressed would be a sign for or against pus formation; for instance, a case entered the hospital with a count of 15,000, which increased in five days to 38,000 and at the operation pus was found. Unfortunately, this does not appear to be true, for here is a case falling from 17,000 in eight days to 9,000, and yet pus was found at the operation. This case is explained probably by the decrease in the virulence of the pus or by its more perfect walling in. Before this increase or decrease in the white count can be of very marked value in the individual case the surgeon must first ask himself and be able to answer these questions: Is the decrease in the blood count due to a decrease in the inflammation, or due to the loss of virulence of the pus, or to the fact that an abscess which exists has already reached the limits of its burrowings and is becoming more definitely localized? — questions difficult to answer. A high count does not necessarily mean that the attack is of a serious nature, for a man with a count of 21,400 got well without an operation, that is, the symptoms were not severe enough to warrant any operation, and another case with a count of 25,000 was not operated on and recovered. In acute appendicitis 75 per cent. of the cases have a count above 13,000, which is the highest count that may normally occur. This presence of leucocytosis may be of aid in making a diagnosis.

In natural sequence the cases of general peritonitis follow those of acute appendicitis. As in general peritonitis from whatever cause, there is no question as to the presence or absence of purulent infection. I have considered these cases in a somewhat different way. Sixty cases were counted, with an average of 19,068. The counts ranged from 4,800 to 47,000. In a case of appendicitis does the blood count show anything in regard to a general peritonitis? In all but two cases out of the 60 the counts lay somewhere between 8,000 and 38,000, which corresponds exactly with the range in the appendix cases. The count, then, in 96 per cent. of the cases is of no aid to the surgeon in trying to decide whether there is a general peritonitis or not. To try to determine its value from a prognostic point of view, I have divided these cases of general peritonitis into those that recovered and those that died. Twenty-three cases recovered, with an average count of 18,921, while 37 cases died, with an average of 19,216. There is practically no difference in these counts. Thinking that perhaps in those cases that died a low count might be of value as in-

[1] Read at a meeting of the Surgical Section of the Suffolk District Medical Society, January 3, 1900.

dicating an inability of the patient to react to the infection, I compared the counts with the temperature, for where there is practically no fever in acute general peritonitis the patient is considered unable to react. One would expect then a low count with a low temperature, as in this fatal case, 8,000; temperature, 98.4°. Here are others, however, which do not follow this rule: 38,200 with a temperature of 99°, and 15,800 with a temperature of 98°, both fatal, and a case that recovered with a count of 19,500 with a temperature of 99.4°. Where there are such great variations as exist in the counts in cases of appendicitis or general peritonitis, the value to the individual of a blood count is reduced to such a small size that it is practically of no use. Seventy-three per cent. of the cases of general peritonitis are accompanied by a leucocytosis, a count over 13,000. This may be of some help in making the diagnosis.

Seventeen cases of fibroid of the uterus were counted, with an average of 9,608, the individual counts ranging from 5,600 to 23,000. They were more closely bunched than this would lead one to suppose, as there was but one case over 14,000. No especial reason was discovered why this case should have so high a count. One other fibroid which I did not include in the 17 had a count of 21,000, but as it was a sloughing submucous variety it doubtless was infected.

There were 26 cases of benign tumors of the ovary and cysts of the ovary or broad ligament; two contained pus and one was twisted and ruptured. This leaves 23 uncomplicated cases, with an average count of 9,543, the individual counts varying from 3,300 to 15,100. The suppurating cysts had counts of 19,000 and 10,200 and the twisted and ruptured of 12,200.

Eighty-four cases of salpingitis were counted, 72 being purulent. The average of these 72 gave a white count of 15,116, the counts running from 6,200 to 32,600. In a number of the cases pus was found where the counts were normal. Thinking that perhaps the system might have become accustomed to the pus, which might have lost its virulence through time, I divided the cases as well as possible into chronic and acute cases. The histories of most of these pelvic troubles are so indefinite that it is hard to pick out a particular date for the onset. As a purely arbitrary time, I considered the elapse of one month to divide the chronic from the acute cases. Looking over the list with this in mind I found that chronic cases of pyosalpinx occurred when the count was 6,200 as well as when it was 24,000, and that the acute cases had not very different limits, 9,200 to 32,600. There were but few cases of salpingitis counted in which pus was not found, 12 cases with an average count of 9,185, the lowest being 5,600 and the highest 11,730. The range from 6,200 to 11,730 is common to both purulent and non-purulent cases. Of the 84 cases of salpingitis 44 per cent. fell within these limits. This makes the count of more value in determining the presence of pus than in the cases of appendicitis. Of the 72 purulent cases only 37 per cent. fell below 11,700, the highest count in the non-purulent, so that in 63 per cent. of the cases a count will aid in diagnosing the presence or absence of pus. Several cases showed a relative increase in the leucocytes in a few days, with the discovery subsequently of pus, and yet one dropped in six days from 16,500 to 11,460 and pus was nevertheless found.

I was in hope that the white count in ectopic gestation might be of aid in making a differential diagnosis from salpingitis. Twenty-three cases of extra-uterine pregnancy had a count made, with an average of 12,286, practically a normal count. The variations in the count, however, were large, 4,800 to 25,800. In these cases there is no question of pus, but I have wondered if the absorption of the blood serum from a ruptured ectopic gestation might not call for a leucocytosis as well as a temperature. This supposition is borne out by a count of 19,200 in a case of ruptured popliteal aneurism. A blood count alone, therefore, in these pelvic troubles is of but slight aid in diagnosis, for non-inflammatory pelvic tumors have counts ranging from 3,300 to 23,000, pus tubes from 5,600 to 32,600, and extra-uterine pregnancies from 4,800 to 25,800. This gives count from 5,600 to 23,000 common property and 87 per cent. of all these cases fall within these limits. Only 48 per cent. of the cases of salpingitis have a leucocytosis. The blood count, therefore, as an aid to diagnosis is not of much value.

The blood in 13 cases of uncomplicated gall-stones was counted, the white corpuscles averaging 11,360. Three cases of empyema of the gall-bladder and abscess of the ducts occurred, averaging 15,066. However, in this as in the cases gone before, the variation in count common to both the simple and the purulent cases is so great that no help can be derived from the count when considering an individual case.

The number of cases of acute inflammation of the gall-bladder that had a blood count was too small to be of any particular value; four cases, two purulent, two not, with counts of 20,400 and 6,000 for the non-purulent and 16,900 and 21,000 for the purulent.

When it is a question of a differential diagnosis between appendicitis, salpingitis and cholecystitis the blood count is of no aid. By reviewing the counts it is seen that the laws which govern leucocytosis, whatever they may be, appear to depend on some personal equation between the susceptibility of the individual and the grade of the inflammation and are not influenced by the locality of that inflammation. The same degree of leucocytosis may occur in inflammation of the appendix as in inflammation of the Fallopian tubes or the gall-bladder, and hence is no help toward a differential diagnosis.

Seven cases of acute intestinal obstruction from various causes occurred, with an average count of 10,014.

Eighteen cases of cancer gave an average of 9,116, and eight of sarcoma of 11,675, all these counts being practically normal except that of one cancer case of 23,800. This may be of help in diagnosing malignant from inflammatory tumors.

Thirty-five cases of abscess formation, abdominal, lumbar, pelvic, subdiaphragmatic, nephritic and in the extremities were counted, giving an average of 22,984, the variations being from 9,000 to 40,000.

If, as we are taught, the increase in the leucocytes is dependent on the pressure exerted on the abscess, we should expect high counts in acute osteomyelitis. Five cases of acute osteomyelitis had counts varying from 14,200 to 20,800 with an average of only 16,880, which is certainly not a high count.

Here follows some counts which I add simply to put them on record: Seven cases of tubercular peritonitis, with an average count of 11,900; five cases of tubercular salpingitis, with an average of 11,280;

two cases of acute hemorrhagic pancreatitis, with counts of 9,200 and 22,800; eight scattered cases of tuberculosis, with an average of 10,912; two cases of suppuration of the knee-joint, 24,600 and 21,200.

To summarize all these cases, 189 non-inflammatory cases, such as cysts, fibroids, extra-uterines, tumors, chronic appendicitis, gall-stones, etc., were averaged, giving 8,811; 71 cases of inflammation not so great as to form pus, with an average of 12,645; and 299 cases of pus formation, with an average of 17,696. These averages show a slight increase from the non-inflammatory to the inflammatory and again to the purulent cases. On the average, blood counts may be of value, but now in individual cases in the non-inflammatory group the counts varied from 4,000 to 25,800, in the simple inflammatory from 5,600 to 32,000, and in the purulent from 4,800 to 47,000. The counts that are common to all three lie somewhere between 5,600 and 25,800. As most of the counts fall within these limits, they are of no practical value to the surgeon when brought face to face with an individual case, and the blood count should have very little weight as compared to the physical signs in helping him to the diagnosis.

From our present knowledge of the causes and variations of leucocytosis we cannot yet make any deductions which are simple enough to be of any great use to the surgeon at the bedside. Doubtless hidden truths might be discovered by juggling with the above counts, but the paths to them would be too tortuous to follow except for scientific investigation.

To end this paper, let me cite one more case, showing how the blood count may point exactly, as we understand it at present, opposite to the physical signs: An abdominal case entered the hospital on October 16th, the second day of illness, with a white count of 19,000, temperature 102°, pulse 108. The abdomen was uniformly rigid and distended. The diagnosis of appendicitis was made. The next day the temperature was 101°, and there were less pain and distention, and yet the blood count had risen to 26,400. The symptoms were never severe enough to warrant an operation, and the patient recovered.

Reports of Societies.

THE OBSTETRICAL SOCIETY OF BOSTON.

MALCOLM STORER, M.D., SECRETARY.

Meeting of January 16, 1900, the President, Dr. Worcester, in the chair.

Dr. George Ben Johnston, of Richmond, Va., by invitation, presented a paper entitled

TREATMENT OF CANCER OF THE CERVIX OF THE UTERUS COMPLICATED BY PREGNANCY.[1]

Owing to the unavoidable absence of the author, it was voted that discussion of the paper be deferred until a subsequent meeting.

Dr. Malcolm Storer read a paper entitled

ON INTERMENSTRUAL DYSMENORRHEA.[2]

Dr. W. L. Burrage: I can recall a number of these cases. At present I have one under my care whom I have had charge of for several years. The case is one of sharp anteflexion with adherent ovaries. For years she has had typical intermenstrual pain such as the reader describes on the fourteenth day. A curetting relieved the pain for some months and cured a discharge of blood coincident with the pain. The pain has, however, been present again until lately, when, according to the patient, she cured it herself by taking a nap every day. The patient was a nervous woman.

Dr. E. Reynolds: I have seen several such cases, and generally I have found in them some chronic inflammatory process, but I have not been able to satisfy myself that such inflammatory processes were always the cause of the pain. The pain has ordinarily not been worse than the usual menstrual pain and the cases have generally recovered without operation.

Dr. C. W. Townsend spoke of a case having pain regularly about the middle of the month, of such intensity as to suggest renal colic, this condition lasting for several years.

Dr. G. J. Engelmann: I have been much interested in the cases of this nature that I have observed, and while it is curious that these symptoms occur with such regularity, I have not been able to connect them with premenstrual symptoms. I have always been able to overcome the pain in these cases by treatment of the pelvic lesion, and regard the pain as pathological rather than as related to the menstrual epoch.

Dr. F. H. Davenport: I am glad to have this subject brought up, as I agree with the reader that these cases are much more common than is generally supposed. Inquiry would certainly show in many cases a set of symptoms occurring at the middle of the menstrual month, usually associated with some pathological condition in the pelvis. What the cause of the pain is, is uncertain. I have always thought that pelvic congestion was the most important factor in causing the pain. Even when there is no gross affection, there is generally evidence that at the time of the pain there is an increased pelvic congestion. In cases where there is no gross lesion the problem is what to do to relieve the symptoms. In many cases I have succeeded in aborting the attacks, or preventing them entirely, by the ordinary treatment for the relief of passive congestion, that is, the use of the glycerine tampon. This is of course only following the line of treatment suggested by the predominant feature.

Dr. J. B. Swift: I can recall a number of these cases in which there was always a definite lesion in the pelvis. One case, however, who was twelve years under my care, had always had this pain, although everything in the pelvis seemed in order. She was a perfectly healthy woman. The pain came regularly on the twelfth and fourteenth days and was situated sometimes on one side and sometimes on the other. Examinations during these attacks of pain only showed that the ovary on the side affected was more tender than the other. This case has not been affected by treatment.

Dr. J. G. Blake: From the number of cases of this condition that I have seen I have been led to believe that the pain is due to congestion of the pelvic organs as they begin to fill with blood preparatory to the next menstrual period. My treatment, which has been very satisfactory to me, has been local depletion by scarification, helped out by the use of ichthyol,

[1] See page 401 of the Journal.
[2] See page 397 of the Journal.

douches, etc. I think the younger members of the profession are too prone to ignore the good effect of depletion. The leeches of old times can be replaced by scarification, removing two drachms to one-half ounce of blood at a time.

DR. G. J. ENGELMANN gave some interesting personal reminiscences of the recent Amsterdam Congress in a paper entitled

THIRD INTERNATIONAL CONGRESS OF OBSTETRICS AND GYNECOLOGY, HELD AT AMSTERDAM, AUGUST 8–12, 1899.[2]

SURGICAL SECTION OF THE SUFFOLK DISTRICT MEDICAL SOCIETY.

F. G. BALCH, M.D., SECRETARY.

REGULAR meeting, Wednesday, January 3, 1900, DR. J. W. ELLIOT in the chair.

DR. J. C. HUBBARD read a paper on

THE PRACTICAL VALUE OF THE WHITE BLOOD COUNT IN SURGICAL CASES.[1]

DR. GREENOUGH: In 1898 I was interested in this subject and particularly in connection with acute appendicitis, and at that time I was able to get from the hospital records just an even 100 cases. I threw out all cases where the blood count was not made within less than twelve hours of the time of operation, and all cases where there was not an accurate description of the conditions found at operation, and from that 100 cases I tried to see if there were any rules that could be made out by which a knowledge of the conditions in the abdomen might be obtained before the operation. Those cases were all severe enough to demand operation and were all acute cases. Any count above 8,000 was considered a leucocytosis. The conclusions were as follows: (1) Leucocytosis may be considered to be a fairly constant symptom of appendicitis; (2) the presence or absence of leucocytosis, as the degree of leucocytosis, without other data is not sufficient to determine the local condition of the appendix and its surroundings; (3) in a series of cases the degree of leucocytosis corresponds roughly with the degree of temperature, but in individual cases great variations are found; (4) the degree of leucocytosis, when considered in connection with the duration of the attack, is of considerable assistance in the diagnosis of the local condition; (5) a leucocytosis above 20,000 on the first or second day of the disease suggests general peritonitis; (6) a low blood count (below 10,000) after the first week, if accompanied by severe symptoms, suggests general peritonitis, and is of grave prognostic significance; but if accompanied by mild symptoms denotes a catarrhal appendix, or well walled off abscess, which has become subacute in character; (7) a high leucocytosis (above 20,000) after the first week may be taken to indicate a local abscess.

I think any one symptom taken alone, and judged as one is inclined to judge leucocytosis, is put very much at a disadvantage, and that if that same symptom is taken in connection with other symptoms it may be of great importance in assisting us in making a diagnosis. For that reason I have thought that the duration of the attack, which is something available in every history, and such considerations as temperature and physical signs and the general appearance of the patient may be put in to help out the blood count, and when that is done it seems to me a certain amount of very valuable assistance can be got from making the white count in any case of acute appendicitis.

DR. ARTHUR T. CABOT said that he regarded a leucocytosis not as a pathognomonic sign of suppuration, but as an indication which was to be taken in conjunction with other symptoms, and which, when thus used, afforded some aid to the diagnosis. He recalled cases in which, after the active symptoms of inflammation had subsided, a persistent leucocytosis led to a further search and the discovery of an abscess. He thought that cases of appendicitis were subject to considerable variations in the degree of leucocytosis, owing to the varying degrees of tension in those abscesses. A perforated appendix affords more or less drainage to the abscess which has formed around it. In many cases this drainage is sufficient to empty the abscess and bring about a cure. In others the abscess is incompletely emptied, and in others again the cavity intermittently fills and empties. Owing to these variations in the condition under which the pus exists, we should expect variations in the degree of leucocytosis, and Dr. Cabot thought that he had observed such variations explainable in these ways.

DR. HEWES: Without having tabulated the cases I have seen, I should say that they would give about the same general results that Dr. Hubbard mentioned, and if I had to be dogmatic in my conclusions, I should say about what he said. At the same time the value of a clinical sign in diagnosis is to be judged by its suggestive rather than by its absolutely diagnostic character; few signs are absolute, and I have always looked upon the value of leucocytosis as a feature of the case of great suggestive value, just as in a case where you have symptoms that are suggestive of trichinosis or rheumatism or grippe, and you find that in eosinophilia you would be more likely to take out a piece of muscle and look at it, although cases of trichinosis have been reported where you did not get eosinophilia, so if I get leucocytosis in a case it makes me look for all possible causes. If the symptoms in that case are suggestive of appendicitis, for instance, it makes me one step surer that it is an appendix. If a case with fever I rule out typhoid and malaria, and look for conditions associated with leucocytosis. I have never seen a case of appendicitis which had the symptom of leucocytosis present where I did not advise operation and have never seen one operated in that way that did not have pus. Of course in some cases in which operation was advised the advice was not taken. I can illustrate the suggestive value by several cases of surgical interest which I have seen. I remember being called twice to very young children who had indefinite signs, pain and fever, and looking at the blood I found an extreme leucocytosis, 40,000 in one case and 38,000 in another. There being no signs of exanthemata, I looked for pus, and after a systematic search found middle-ear suppuration in both cases. I have seen three cases in which I was sent for to look at the blood for malaria, but on looking at the fresh blood I noticed the great number of leucocytes, and said, "This cannot be malaria and it is very likely pus." One case turned

[1] See page 409 of the Journal.

[2] See page 403 of the Journal.

out to be prostatic abscess, another middle ear. That is what I mean by the suggestive value of leucocytosis, the fact that you get it makes you look for serious causes, although ordinary things like gastritis may cause it. It seems to me you are less likely to overlook serious things if you take leucocytosis seriously.

Dr. Thorndike: I have so few figures at my disposal that it does not seem worth while to read them. In a general way they agree with Dr. Hubbard's, and seem to point against the reliability of leucocytosis as a sign of diagnostic value in surgical cases. At the same time it must be remembered that few diagnostic aids are infallible and we rarely expect a diagnosis to depend upon one sign alone. It is the whole clinical picture made up of many bits of evidence upon which our opinion must be based — our opinion as to the operative or non-operative indications in the given instance. Any aid to this grouping of evidence which forms the opinion, even if such aid is not infallible, must be of value. The x-ray is such an aid even though misleading at times. Leucocytosis is such an aid — also misleading at times, but still of the greatest value in many doubtful cases. I have recently operated twice in the very beginning of acute osteomyelitis — so early in the disease that I am sure I should have delayed for further operative encouragement, had not marked leucocytosis in both cases compelled an operation in each instance. Dr. Hubbard's statistics are both interesting and valuable, but I do not think they should be taken as proving anything more than the fallibility of a leucocyte count in surgical cases. They certainly do not prove its worthlessness.

Dr. Munro: I have always regarded leucocytosis as a great comfort to bear out one's judgment that has been based on other diagnostic signs. I have never hesitated to operate where other diagnostic signs indicated, if leucocytosis has been absent, but it has been a great comfort to feel there was a leucocytosis when all other signs bore out the inclination to operate for pus.

Dr. Richardson: I have learned to place much reliance upon the blood count in connection with acute abdominal symptoms. If in a case of appendicitis there is considerable doubt whether to operate or not, the blood count becomes an important factor. When local and constitutional signs indicate clearly the necessity for operation, I should then operate whatever the blood count might be. To delay in such cases, when there is no leucocytosis, may lead to disaster. I recall a case in which the count was not abnormal, and yet an exploration showed a general peritonitis. The general infection was so overwhelming that there was no reaction whatever. My feeling is that in the blood count we have a guide which, though generally of great value, is not always unerring.

Dr. Elliot: It seems to me this is a subject of great importance in that we have had these blood counts made year after year, and now we hope to reap something from them. From the practical surgeon's point of view the question we want to decide is, does the blood count help us in a difficult case? Dr. Richardson said that in a doubtful case it helps you if you get an increase in the whites. It is the same point that Dr. Hewes made; it is suggestive. But suppose everything else is evenly balanced and you don't know what to do, should the leucocytosis guide you? In appendicitis the rule of almost all surgeons would be if we were doubtful, and some one symptom was a little worse than we liked to leave it, we would operate. So with leucocytosis, but that rather begs the question. The true test of its value is to balance the other symptoms evenly, and if there is no leucocytosis, no operation; if there is a leucocytosis we operate. Unfortunately, exactly that circumstance came to me in the hospital. I was surgeon to the outpatients then. In that case the physical examination was negative on account of a very fat abdomen, and yet the patient was evidently ill. The blood count gave no leucocytosis, and although I could not decide before, it decided me not to operate. The next morning I did operate and found the abdomen full of pus. There is no doubt, in my mind, that a leucocytosis in a test case like this is not decisive, and all the figures given here to-night more or less confirm this view. It has a certain value in that it is another symptom which requires study and explanation and may thus lead to a correct diagnosis. I remember a case of extra-uterine pregnancy where it was very difficult to make a diagnosis; the blood count was very high, and therefore every one thought it must be salpingitis. In another case of typhoid perforation the leucocytosis had been taken in the evening. I think it was 8,000, and in the morning it was 17,000, very much increased over night, and I operated with all the more encouragement, but it did not decide the question. I think the subject clearly needs much more study. It seems to me we are at present pretty much at sea in the matter.

Dr. H. A. Lothrop reported a case of

GUNSHOT WOUND OF THE ABDOMEN, WITH MULTIPLE WOUNDS OF THE INTESTINE.[1]

Dr. Munro: It is an extremely interesting case and worthy of better discussion than I am able to offer. One point Dr. Lothrop mentioned that impressed me because it has been my experience in a number of these acute abdominal hemorrhages, and that is the low pulse. I think almost without exception every case of abdominal acute hemorrhage other than extra-uterine pregnancy, such as bullet wounds, stab wounds, etc., where the abdomen has been full of retained blood, had a slow pulse, in many cases of good volume, and occasionally of poor volume. I have seen a number of abdomens that were distended with blood, fresh and in clots, with a pulse of 72 and 80. I think that it is of value to recognize this fact, as it is not brought out to any extent in the books. A factor that has decided me to operate in cases of contusion of the abdomen with rupture of the liver or spleen has been a normal pulse with distention and spasm, and not a high pulse, which the books lead us to believe is always essential to these cases.

Dr. Elliot: I would like to ask Dr. Lothrop if the blood was examined at all during the case, or if the time of coagulation was tested during the course of the case?

Dr. Lothrop: I think there were no examinations made (that is, examinations of blood as to time of coagulation).

Dr. Elliot: Was there anything about the blood in the bed that suggested its deterioration?

Dr. Lothrop: It was clotted.

Dr. Elliot: Probably in the normal time, because it was seen very quickly?

[1] See page 405 of the Journal.

DR. LOTHROP: I am inclined to think the hemorrhage was slow and that the blood was some time accumulating.

DR. ELLIOT: I sympathize with Dr. Lothrop in his unfortunate result. I would make the suggestion that the hemorrhage and the transfusion of salt solution may have altered the constitution of the blood, and in a similar case I think I should surely have the blood examined carefully as to its time of coagulation, and in such a case I should do everything I could to restore the quality of the blood. Perhaps the first hemorrhage reducing the quality of the blood was what finally killed the man, although you were able by transfusion to pull him through for a certain time; he never got the right quality of blood. It seems to me if it had been a real hemorrhage from an artery the vessel would have been found. I saw this year a case in Dr. Homans's service that bled repeatedly from muscular substance, and no bleeding point was ever found. He finally poured the wound full of perchloride of iron and left it. The man finally recovered. I think the blood was not examined there either. I do not know that you could do anything, do not know of anything to correct that condition of blood, but I think it would be interesting to study the matter and see what could be done.

DR. HEWES: The injection of gelatine into the circulation has been reported to affect the coagulability of the blood considerably. It seems to me that it would be rather odd if the condition of the blood did not pick up in that time between the hemorrhages.

DR. CABOT said he was a believer in irrigation as a means of cleansing the abdominal cavity. Especially is it useful in those cases where, through injury or rupture, the intestinal contents have escaped into the general peritoneal cavity. In his experience of gunshot wounds of the intestine it has been a not uncommon thing to find small loops of the bowel fairly riddled with perforations, and for these conditions he thinks a resection of these portions of the bowels the best and quickest method of dealing with them.

Recent Literature.

La peste et son microbe. Par le DR. NETTER, Professeur agrégé à la Faculté de Médecine de Paris. Pp. 124. Paris: Carré et Naud. 1900.

This little volume gives a very good résumé of the subject to the present time in four chapters, which treat of the following topics: (1) The plague bacillus: its morphological characteristics; action upon animals; modification of its virulence; action of heat, drying, light and disinfectants upon it. (2) Clinical history: the bubonic plague, different forms — septicemic, pneumonic and intestinal; diagnosis, etc. (3) Method of spread and prevention: direct and indirect contagion; action of rats and parasites; seasonal prevalence and duration. (4) Serotherapy and vaccination.

A very clear diagram illustrates the results of an experiment in vaccinating nearly the entire population of the city of Hubli, in British India. The results obtained in this and other cities by the use of Haffkine's vaccine were very convincing.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, APRIL 19, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.

SCIENCE PURE AND SCIENCE APPLIED.

THE tendency of the improvement in instruction in our larger medical schools during the past decade, and of the greatly increased competition in all medical work, has resulted in the production of more and more limited fields of study and practice and in the sharper limitation of specialties, both scientific and practical. While the advance in this direction has been in many ways beneficial, enabling the scientist and practical physician each to devote himself more exclusively to some specific branch of medicine, and to become more expert and skilled in this line than would be otherwise possible, there are certain evident dangers in carrying this tendency too far. The physician whose life is devoted to too narrow a specialty is likely to become narrow in his general views of medicine, and to be ignorant or careless of important facts in other branches which have no less a bearing on the subject as a whole than those connected with his own department. This condition has long been evident among our scientific teachers; it is daily becoming more and more apparent among our practitioners, especially among those who are connected with the larger medical institutions and devote a larger portion of their time to study and investigation.

It is not only, however, between the different branches of medical science themselves or between the various specialties of medical practice that this want of understanding and thorough appreciation exists. For many years, almost since the establishment of the larger laboratories, there has been a marked separation between the permanent scientific workers or heads of laboratories, and the practitioners. Their aims have been different until they have become so separated that the one class is losing knowledge, and, to a certain degree, interest in the other. This is especially the case with the purely scientific teachers, whose ignorance of clinical work and of the practice of medicine is regrettable. The general practitioner knows a little about scientific work; the physicians connected with larger institutions in larger cities still more. Nevertheless, the separation between

these two classes of medical men is altogether too wide.

One reason for this lies in the fact that the scientific men have devoted their time and abilities too much to the investigation of purely scientific subjects. The value of such investigation is great and its results are often its justification. But there is another form of investigation which belongs to the scientific physician, which we believe equally or more important. This is investigation along lines which are likely to improve the practical knowledge, the *practice*, and not merely the theory, of medicine. Such subjects for investigation if not known to the scientific worker can readily be pointed out by the clinician. The time is not far distant when we hope to see the scientific investigator and the scientific practitioner working more closely together.

Any form of medical education which draws these classes further apart, we strongly deprecate. Any medical system which would confer a degree upon a medical scientist who had no knowledge of the practice of medicine, and thus legalize his admission as a teacher in a medical institution would seem a serious mistake in medical education, and can only lead to a greater divergence in the aims and views of two classes of men to whom co-operation is essential for their best work.

ANNUAL REPORT OF THE MASSACHUSETTS GENERAL HOSPITAL.

THE report of the Massachusetts General Hospital for 1899 is, as usual, an interesting and important document. It impresses upon us again what we are perhaps not likely to forget, that progress in the systematic care of the sick has never been more rapid than now, and that a modern hospital bears but a faint resemblance to its predecessor of a generation ago. The report before us commemorates very notable advances even within the last year, and marks out a plan of expansion for the immediate future, which must be a source of satisfaction to all who are interested in hospital development.

The special report of the trustees gives the following statistics of the work of the hospital: The total number of patients treated during the year was 5,086, against 5,053 in 1898, and the average number in the hospital was 261, against 253 in 1898. The number of free patients treated during the year was 2,981, against 3,010 in 1898, and the number of patients paying in whole or in part was 2,105, against 2,043 in 1898. The average cost per week was $13.74, against $13.16 in 1898. The number of out-patients (new cases) treated during the year was 31,003, against 28,741 in 1898. This service involved 104,205 visits — a daily average of 340 — and the filling of 65,530 prescriptions. The number of patients treated in the accident room during the year was 3,977, against 3,514 in 1898. Of this number 958 were retained in the hospital.

It is further recorded that the average length of time of residence of paying and free patients in the hospital was nineteen days, or twenty days if the Convalescent Home be included, a fact which the trustees regard with satisfaction, and which they attribute to improved medical and surgical practice. This is no doubt in great measure justified, but it must also be remembered that cases with chronic tendencies are carefully excluded from the wards or permitted to remain but a short time, if admitted. Statistics of this sort are misleading, if this fact is not borne in mind.

The trustees have words of great commendation for the work of the Clinical-Pathological Laboratory, for which they have recently appropriated $2,500, for the purpose of enlarging the present quarters, and establishing a model plant for photomicrography. The perfectly clear recognition of the importance of laboratory research in close conjunction with the everyday work of the hospital wards is sure to bring results of importance and to pave the way toward a union of the so-called practical and scientific sides of medicine, which at times seem to be too widely separated, either for the good of science or of practice.

Of the new buildings now in process of construction the surgical operating building is one which has long been particularly needed, and which will no doubt be appreciated by the surgeons, who have hitherto been forced to put up with accommodations quite behind the present standard of surgical requirements. A domestic building and an addition to the Nurses' Home will soon be furnished, both of them structures which the growth of the hospital has rendered imperatively necessary. Other contemplated buildings are an adequate and properly equipped out-patient department, and a ward building in connection with the out-patient service.

The director of the Clinical-Pathological Laboratory, Dr. J. H. Wright, gives an excellent account of the scope and function of such a laboratory. He says in part: "The foundation of clinical or pathological laboratories in exclusive connection with hospitals is a comparatively recent thing in this country, where it is only beginning to be generally recognized that our knowledge of the nature and causes of disease has reached the dignity of a science with great possibilities for the good of the human race; and that properly equipped laboratories are quite as necessary for the proper cultivation of this science as are laboratories for biology, chemistry, or physics. At the present time, there are probably not more than half a dozen such special laboratories that are worthy of the name in this country; while in some European countries, particularly in Germany, the hospital laboratory has been regarded for many years as a necessary department of a large hospital, and it is largely due to these laboratories that Germany has been able to add so much to medical knowledge, for most of the remarkable progress in medicine and surgery has been made possible through experiments and observations

carried on in them." At the end of Dr. Wright's report is printed a list of publications from the laboratory, an example which should certainly be followed by other departments of the hospital.

The development of the McLean Hospital is uninterrupted. Dr. Cowles, Medical Superintendent, speaking of the recent tendency toward a closer clinical study of patients, remarks: "It is interesting to note that our conceptions of the principal forms of mental disease have changed gradually through being subjected to the rigid tests of actual cases, and that this leads to simplifying the forms or making fewer of them. The encouragement is in the sense of having gained certain satisfactory conceptions that stand the test of clinical facts." It is to be noted that "melancholia" and "mania" no longer occupy a place in the tabulated list of diseases. An addition of importance to the McLean Hospital has been the installation of an admirable hydrotherapeutic apparatus.

Fifty-two pages of this otherwise excellent report are taken up with the inevitable tables of medical and surgical diseases of the General Hospital, and this exclusive of the Out-Patient Department, which receives scant notice anywhere. The diseases are not carefully tabulated and are of small value as statistics or for purposes of reference. Dementia, neurasthenia and hysteria, for example, are classed as surgical diseases, as is also miscarriage. As we have before had occasion to say, such statistics are worthless unless prepared with scrupulous care. The difficulty seems inherent in the system, and is by no means peculiar to the Massachusetts Hospital. It is a matter for congratulation that the out-patient diseases were wholly omitted. But why should there not be some reform in this matter of the tabulation of diseases, which is so easily capable of reformation?

ARMY CONTRACT SURGEONS.

SURGEON-GENERAL STERNBERG has prepared a bill, just submitted to Congress with the approval of the Secretary of War, providing for the appointment as commissioned officers of volunteers, with the rank of first lieutenant, of contract surgeons who have rendered one year's faithful and satisfactory service in the army of the United States. The bill provides for such appointments after the usual physical and professional examinations, and the officers so commissioned are to be subject to honorable discharge when their services are no longer required. The bill also provides for the promotion of such assistant surgeons to the rank of captain after two years' faithful and satisfactory service as a commissioned officer in the grade of lieutenant. There are now nearly five hundred contract surgeons serving with troops, and the above bill is in line with the constant efforts of the Surgeon-General to improve their status and promote their welfare. These men are frequently called upon to fill places of great responsibility, but are constantly at an official disadvantage through their lack of definite military rights and authority. It is much to be hoped that Congress will do justice to this class of deserving medical men, but the urgent needs of the Army Medical Department appear to receive but little consideration when compared with the claims of the practical politicians outside the service.

We recently received a letter from a doctor of first-rate academic and professional training, the possessor of some of the best degrees to be had in this country, who had served two years as an acting assistant surgeon. In reading the letter one gets the feeling that "the iron had entered into the soul" of the writer. But the letter throws a clear light upon a sombre corner of the service and we make extracts therefrom without apologies.

Some time ago, while in conversation with an officer of the United States Army, upon the subject of the acting assistant surgeon of the army, I asked him his opinion of the contract surgeons. His answer was, "They are no better than our common packers or civilian teamsters; in the eyes of the officers and privates of the army they are outsiders, hired by the Government, and are entitled to no more consideration than merely the payment of $150, as specified in their contracts." This from a man whose only redeeming feature, if so it may be called, was a silver leaf upon his shoulder and the uniform he wore. That is the general opinion and position of the army towards the contract surgeon, and especially the opinion of the younger regular and volunteer surgeons in our army, who because they are the wearers of a single bar upon the shoulder, in the majority of cases, I am sorry to say, place that above and value it more than the little cross upon their collars, the symbol of a profession at once noble and self-sacrificing.

After a service of two years in the United States Army as an acting assistant surgeon, and a careful study of the conditions existing in our medical corps, I can honestly say that it is my opinion that "rank" is the curse of our medical corps, and I believe that the shoulder bar and leaf have been responsible for more of the mismanagement and terrible mortality in our camps during the late war than anything else. What difference did it make whether a man was absolutely incompetent as a physician or surgeon, and was jeopardizing the lives of his fellow men every day he lived? Was he not a "major" or a "colonel," or a "commissioned" officer in the regular or volunteer army? Did that not give him the right to be careless? Did that not give him the right to jeopardize human life? From what I have seen, it seems so, and I think that the contract surgeon of the army will uphold me in my statement.

What would the army have done without the acting assistant surgeons? Yet they are the men who are most trodden upon and get absolutely no credit for their work. The contract surgeon has no "rank" in the army, therefore he is at his best in the wards and by the bedside of the suffering soldier. The contract surgeon does not have to bring a poor tottering sick man to "attention" because he has "rank" stamped upon his shoulder! He is a "doctor of medicine," not a "lieutenant" or "major," and who would not choose the former title? He is in the army on his merit as a physician or surgeon and gets his standing by that, not by the length of time he may have been in

the army. Many of them, yes, most of them, are men who have held responsible positions in civil life, and because their country needed them, they threw up everything and responded with a will to the call.

Many of them have died and are still dying from wounds and disease; many will carry the marks of their service to the grave with them; many will be unable to regain what they have lost by their devotion to their country; and what have the representatives of that country done for them? They have put them in the worst sink-holes of our island possessions, exposed them to every sort of contagion and filth; they have put them under men who were socially and professionally their inferiors; forced them to see their fellow men suffer from epidemics which they could not prevent, because those who had the courage to speak out promptly had their contracts annulled and were dismissed. They have been asked even to forswear their professional opinion. They have been hooted at by privates and jeered at by officers of the army. They have been misrepresented without a chance to redeem themselves or deny statements made against them. Without a word of warning their contracts were annulled; they were simply dropped at the word and discretion of any one under whose command they happened to be, without any investigation whatever. If the statement was made that a contract surgeon was incompetent, it made no difference whether the statement was true or not as long as it was endorsed by "rank."

MEDICAL NOTES.

STATISTICS FROM CARLSBAD FOR 1899. — At Carlsbad, the Austrian watering place, according to the official report which has just been published by the authorities, 50,543 persons were registered as bathers in 1899. Of these, 19,780 visitors came from Austria and Hungary, 28,328 from other European countries, 2,193 from America, 170 from Africa, 66 from Asia and 6 from Australia. Among the visitors from European countries 944 visitors registered from England, Scotland and Ireland, 560 came from France, 259 from Italy, 5,674 from Russia, 333 from Sweden and Norway, 273 from Switzerland and 118 from Denmark. Of the 50,543 visitors, 26,322 were males and 24,221 females. From England 460 males and 484 females, and from America 989 males and 1,024 females, came to use the waters of Carlsbad. As in Carlsbad only the names of those visitors are registered as bathers who stay longer than eight days, and for the purpose of drinking the waters, holidaymakers, tourists and other travellers, whose number amounted to 108,000 in 1899, were registered separately, and therefore Carlsbad, as in former years, claims the record of being the most frequented bathing place in Europe.

RESIGNATION OF SIR WILLIAM C. GAIRDNER. — Sir William C. Gairdner has resigned his position as professor of the practice of physic in the University of Glasgow, owing to advancing years and defective eyesight. On the occasion of his formal resignation he said: "My class-room and my hospital remain now, as they have all along been, the greatest of my occupations and the sources of the most profound satisfaction in endeavoring to serve thereby my day and generation." In the words of the *Lancet*, Sir William's *forte* as a teacher has been that he has always been a learner.

DEATH OF SIR WILLIAM OVEREND PRIESTLY. — The death is announced of Sir William Overend Priestly, member of Parliament for the Universities of Edinburgh and St. Andrew's since 1896, and former president of the Obstetrical Society of London. Dr. Priestly was seventy-one years old, a graduate in medicine of the University of Edinburgh, and the author of various works on obstetrics. He was knighted in 1893.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the six days ending at noon, April 17, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 56, scarlatina 32, measles 87, typhoid fever 4.

BOSTON SOCIETY OF MEDICAL SCIENCES. — At a meeting of the Society held April 10th, papers were presented as follows: Dr. G. B. Magrath spoke "On the Relation of Age, Physique and Preliminary Training to Class Rank in Pathology," from which the relatively greater importance of age and preliminary training was shown. Dr. F. P. Denny gave a "Report on the Examination for Diphtheria Bacilli of Cultures from Four Hundred and Seventy-five Healthy Individuals." Dr. F. B. Mallory demonstrated three new methods of staining, original with him, illustrated by microscope slides. Dr. J. H. Wright reported the pathological anatomy of a case of multiple myelomata, with lantern-slide demonstration.

SUFFOLK DISTRICT MEDICAL SOCIETY. — The annual meeting commemorating the fiftieth anniversary of the Society will be held at the Massachusetts Institute of Technology, Walker Building (corner of Boylston and Clarendon Streets), Room 22, Saturday, April 28th, at 8 P. M. Attention is called to the announcement on the last page.

PHYSICAL EDUCATION SOCIETY. — At the last meeting of the Society Dr. Myles Standish read a paper on the care of school children's eyes and Dr. J. S. Stone one on proper seating. Dr. Stone also took occasion to explain a model school chair devised by Professor Miller, of the Massachusetts Institute of Technology.

NEW YORK.

A CASE OF GASTRO-ENTEROSTOMY. — On April 9th Dr. Robert F. Weir showed at the Medical Association of the Greater City of New York a remarkably successful case of gastro-enterostomy for carcinoma of the stomach. The patient, a woman of over forty, was operated on four weeks ago, and is now in excellent condition and daily gaining in weight. The tumor, which felt on external manipulation about the size of a large orange, was at first supposed to be a pyloric growth. An exploratory incision showed,

however, that the pylorus was but little involved. In the subsequent operation a large section of the stomach, extending some seven inches along the greater curvature and five inches along the lesser curvature, was removed. The patient's recovery was rapid and uneventful.

THE QUESTION OF MIDWIVES.— At a hearing on April 13th, before Mayor Van Wyck, on the Plunkitt Bill, a midwife made the statement that she purchased a diploma for $200, "without ever seeing the body of a woman or child, or even a woman's bone." When she got the diploma she felt so incompetent that she did not dare to practise, and so went to Germany and took a thorough course of study. The bill referred to, which was passed by the Legislature last month, provides that all midwives practising in New York City must first pass an examination of a commission of five physicians appointed for the purpose by the Board of Health.

APPOINTMENT OF DRS. WEIR AND BULL. — Drs. Robert F. Weir and William T. Bull, the professors of surgery in the College of Physicians and Surgeons, have been appointed attending surgeons to Roosevelt Hospital, and will divide between them the service from which Dr. McBurney recently resigned. In the future their clinics, which have heretofore been held at the New York Hospital, which is at a considerable distance from the college, will be at the Roosevelt, directly opposite the college buildings. Dr. Weir has been an attending surgeon at the New York Hospital for nearly thirty years.

COLLECTION OF HOSPITAL SATURDAY AND SUNDAY ASSOCIATION. — The official report shows this annual collection to have been $74,177, which is some $4,000 more than last year. Of this amount over $9,000, or $2,000 in excess of any previous year, was collected by the Woman's Auxiliary. Thirteen thousand dollars was specially designated to particular hospitals by individual donors. On April 13th the undesignated fund was distributed to the various institutions represented in the Association, on the basis, as usual, of the free work done by each.

ARMY NOTES.

COMPLIMENTARY DINNER TO COL. C. H. ALDEN. —Army medical officers of the active and retired lists, on duty near or residing in the city of Washington, will give a complimentary dinner to Col. C. H. Alden, Assistant Surgeon-General, on the eve of his retirement from active service, on April 28th, by reason of age. Colonel Alden entered the army as an assistant surgeon in 1860, serving throughout the Civil War and being brevetted major and lieutenant-colonel for faithful and meritorious services. Colonel Alden saw much service on the frontier after the Civil War, but has latterly acted in an executive capacity in connection with various army examining boards and the office of the Surgeon-General, acting as assistant to the Surgeon-General during the war with Spain. Colonel Alden carries with him into private life the respect and esteem of all who have been brought into association with him. He intends to make his future home at Hingham, Mass.

WOODBRIDGE TREATMENT OF TYPHOID FEVER.— It is understood that a board of medical officers convened to investigate the merits of the Woodbridge treatment of typhoid fever, as carried out at the Fort Myer General Hospital during the war with Spain by Dr. Woodbridge himself, then major and surgeon, United States Volunteers, finds a mortality of about ten per cent. of all cases treated by the Woodbridge method and about seven per cent. of all cases treated by other methods. In all, about 600 cases of typhoid fever were treated at the Fort Myer Hospital; of these, 57 were treated by Dr. Woodbridge, who was afforded every facility in the application of his treatment.

MEETING OF THE CONFEDERATE SURGEONS' ASSOCIATION.— A feature of the reunion of Confederate veterans, to be held at Louisville, Ky., on May 30th, will be the meeting of the Confederate Surgeons' Association. A medical committee has been appointed by the general committee, and Dr. Preston B. Scott, one of the two surviving medical directors of the Confederate Army, has been made chairman. It is stated that the whereabouts of about 1,500 ex-Confederate surgeons is known to the committee, which will use every effort to secure a large attendance.

SPECIAL NURSES.— A general order has been issued by the War Department governing the employment of special nurses for sick officers and soldiers at stations where treatment in an army hospital cannot be obtained. In such cases it is stipulated that the attending physician shall certify that the services of the nurse were indispensable. The rate of compensation is the same as that allowed army nurses serving in the United States, namely, $10 per week.

DR. CABELL RETIRES FROM THE "MAINE." — Dr. J. C. Cabell, Captain and Assistant Surgeon, United States Army, retired, who has for some months been in command of the American hospital ship *Maine*, receiving the British wounded in South Africa, has relinquished command of this ship and is now *en route* to the United States, the leave of absence granted him by the War Department having expired.

TO STUDY BUBONIC PLAGUE.— Lieut. W. J. Calvert, Assistant Surgeon, United States Army, one of the members of the board of medical officers appointed to study tropical diseases in the Philippines, has gone to Japan to study bubonic plague under Kitasato at the University of Tokio.

A WHOLESALE REQUISITION FOR PILLS AND THERMOMETERS.— As showing the magnitude of medical operations in the Philippines it is interesting to note that a recent requisition, among other items, contained a request for five million quinine pills and ten thousand clinical thermometers.

Miscellany.

MOSQUITOES AND THE MARCH OF EMPIRE.

One of the most useful things, according to the *Practitioner*, which we have learned in these latter days is the infinite importance of the infinitely little. To practical men of only a decade ago the idea that mosquitoes were the greatest obstacle to the expansion of our empire would have seemed mere foolishness. We now know that if we are to carry out our mission of civilizing the heathen (and taking charge of his land) and bear the "white man's burden" successfully (and reap the profit of the undertaking), we must conquer the white man's worst enemy — that is, malaria. Therefore all the batteries of science must be directed on the germ-bearing mosquito. As may be gathered from the address delivered at the Royal Colonial Institute a week or two ago by Dr. Manson, the experts feel tolerably sure that the extermination of the mosquito is quite within the sphere of practical hygiene. But even mosquitoes cannot be killed without money. It is, therefore, an enterprise of great pith and moment to make business men looking for new markets realize that money bestowed for that purpose is a thoroughly sound investment in a commercial sense. And malaria, though the worst, is not the only enemy that hinders the march of empire. There are other diseases, both epidemic and endemic, that must be overcome if the tropics are to become habitable by our race. Here, again, we have to fight the infinitesimal. The solution of the problem of acclimatization lies in the destruction of microbes, and this, in Dr. Manson's phrase, is a question of knowledge and the application of knowledge. The London School of Tropical Medicine has been founded with the object of gaining the necessary knowledge and teaching men whose way of professional life lies in the Colonies how to apply that knowledge. It is already doing excellent work, but if it is to do the State all the service which should be done by such an institution, it must be much more fully equipped than it now is with the means of research and of teaching. It is earnestly to be hoped that Dr. Manson's appeal for a liberal endowment will not fall on deaf ears.

Correspondence.

DR. LEFFINGWELL PROTESTS.

Aurora-on-Cayuga Lake, N. Y.,
April 11, 1900.

Mr. Editor:—Simply in the interest of scientific accuracy, will you permit me to utter a gentle protest against the method employed by Dr. J. J. Putnam in that criticism of my pamphlet which recently he contributed to your columns? Of its many inaccuracies and misstatements I shall not speak, but one or two peculiarities of his method so touch the ethics of all criticism that I ask for space to refer to them.

It would seem a matter beyond any possible questioning that Professor Putnam had no sort of right to change the language of a statement which I had criticised in order to render my criticism void and inaccurate. This is precisely what he has done more than once. For instance, Professor Putnam calls attention to what he describes as "the statement, originally made, I believe, by Ludwig, and cited by Mosso in the biography of his great teacher, to the effect that *many experiments* would be made impossible by the occurrence of pain. Dr. Leffingwell rejoins," etc.

Now I rejoined to nothing of the kind. Mosso "cited" nothing of the kind either from Ludwig or anybody else. In my pamphlet I quoted Mosso's words from the *London Lancet's* translation: "It is an error to believe that experiments can be performed on an animal which feels"; I quoted from a manuscript that Professor Mosso sent me himself: "It is an error to think that one can experiment on animals that have not lost sensation"; and I now quote from the original essay in *La Revue Scientifique* of July 27, 1895: "*C'est une erreur de croire que l'on peut faire des experiences sur un animal qui sent.*" That statement — whether in the original or in either of its translations — is absolutely untrue, and I said so in my pamphlet. Professor Putnam sees it as well as anybody; but he also sees that by changing Mosso's language, and inserting the word "many" before "experiments" he could frame a statement that would be entirely truthful. To do this — and then to quote me as "rejoining" to a statement manufactured by himself — is that in accord with the ethics of controversy as Professor Putnam understands them? To be sure he admits that he is not giving "the exact expressions used" by Mosso, since he had no "access to the original." I leave it to your readers to value that apology at its true worth.

Let me cite yet another instance. Dr. Leffingwell, he says, "*denies the justice of the claim which Professor Porter makes*, that animals are kept from suffering *any considerable pain*" when vivisected under anesthetics or narcotics at the Medical School. Absolutely untrue; Professor Porter made no such claim and I have certainly made no such denial. That which I criticised in the pamphlet was something entirely different. In the *Boston Transcript*, Professor Porter and his associates had declared in regard to "painful vivisections" that "such investigations are rare. *None such* have been made in the Harvard Medical School within our knowledge." That statement was certainly untrue; nobody defends it since I pointed out the experiments of Dr. Ott — to say nothing of the investigations of Professor Porter himself. Dr. Putnam sees its untruth as well as anybody, so he constructs a *new* sentence; puts it into the mouth of Professor Porter as being what he "believes to have been Professor Porter's meaning," and cites me as "denying" it! If others believe in this method of controversy, I do not; and I must protest against being quoted as opposing assertions manufactured by my critic for the sole purpose of rendering my own criticism void. I cannot regard it as a very laudable line of conduct, nor one that in any way tends to the elucidation of the truth.

Very truly yours,
Albert Leffingwell, M.D.

ANOTHER HAIR-BALL.

Boston, April 13, 1900.

Mr. Editor: — Dr. Brewster's case of hair-ball, in the last number of the Journal, reminds me of one in London in 1866, under the care of Mr. Knowsley Thornton. A young woman of about twenty-five years of age had a sausage-shaped tumor in the region of the transverse colon. It was about ten inches long and its exact nature could not be made out, but it seemed to be within the colon. When Mr. Thornton opened the abdomen the tumor was found to be in the stomach and on opening the stomach the tumor was found to occupy its long axis and to consist of a mass of hair, nine inches long by two and a half wide, which had been gradually swallowed during the past twelve years at the daily morning and evening combings, the hair combed out at those times having been twisted up, put in the mouth and swallowed. The patient recovered. As it was the first time I had seen the stomach opened, the case made a strong impression on me.

Very truly yours,
John Homans, M.D.

METEOROLOGICAL RECORD

For the week ending April 7th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer.	Thermometer.			Relative humidity.		Direction of wind.		Velocity of wind.		We'th'r. *		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S....1	29.94	43	54	32	42	40	41	N.W.	W.	18	12	C.	C.	
M...2	30.04	50	59	40	47	44	46	W.	S.	8	8	F.	C.	
T....3	29.73	43	47	39	92	73	82	N.	W.	11	13	R.	C.	.44
W...4	29.94	42	51	32	61	60	60	N.W.	N.W.	18	15	C.	C.	
T....5	30.03	38	46	31	44	52	48	N.	E.	7	2	C.	C.	
F....6	29.65	48	59	38	48	54	51	N.	N.W.	8	16	C.	C.	
S....7	29.52	50	58	41	52	39	46	N.	N.W.	12	16	C.	C.	
☞														

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☞ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, APRIL 7, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Diphtheria and croup.	Measles.
New York . .	3,654,594	1647	581	22.32	25.74	.72	2.82	1.86
Chicago . . .	1,619,226	—	—	—	—	—	—	—
Philadelphia .	1,266,832	—	—	—	—	—	—	—
St. Louis. . .	623,000	—	—	—	—	—	—	—
Boston . . .	539,416	276	70	26.28	21.24	2.19	3.96	.36
Baltimore . .	506,389	230	67	18.92	22.79	1.29	3.44	—
Cincinnati . .	405,000	—	—	—	—	—	—	—
Cleveland . .	350,000	—	—	—	—	—	—	—
Pittsburg . .	305,000	137	50	18.98	26.28	—	2.19	2.19
Washington .	277,000	169	46	18.88	10.03	1.18	1.18	.59
Milwaukee . .	275,000	—	—	—	—	—	—	—
Providence . .	150,000	106	17	1.17	43.20	.90	—	—
Nashville . .	87,754	31	7	9.69	38 76	—	—	—
Charleston . .	65,165	—	—	—	—	—	—	—
Worcester . .	111,232	49	16	2.04	16.32	—	—	—
Fall River . .	103,142	59	24	5.07	31.11	—	—	1.69
Cambridge . .	92,820	33	10	24.24	27.27	—	3.03	—
Lowell . . .	90,114	47	13	6.93	34.85	—	—	—
New Bedford .	70,511	38	13	7.89	23.67	—	—	—
Lynn	68,218	28	1	10.71	21.42	—	—	—
Somerville . .	64,394	26	3	11.55	23.10	—	—	—
Lawrence . .	59,072	32	8	15.65	15.65	—	—	—
Springfield . .	58,266	25	6	16.00	32.00	—	—	—
Holyoke . . .	44,510	23	6	21.75	13.05	—	4.35	—
Brockton . .	38,750	—	—	—	—	—	—	—
Salem	37,732	10	—	50.00	20.00	—	—	—
Malden . . .	36,421	12	1	25.00	8.33	—	8.33	—
Chelsea . . .	34,235	16	3	—	—	—	—	—
Haverhill . .	32,651	18	—	—	33.33	—	—	—
Gloucester . .	31,426	9	—	11.11	—	—	—	—
Fitchburg . .	30,523	17	5	29.40	17.54	—	5.88	—
Newton . . .	30,461	16	5	31.25	18.75	—	6.25	—
Taunton . . .	28,527	12	3	8 33	33.33	—	—	—
Everett . . .	28,102	7	4	—	—	—	—	—
Quincy . . .	24,578	9	1	22.22	11.11	—	—	—
Pittsfield . .	23,421	—	—	—	—	—	—	—
Waltham . . .	22,791	16	2	48.00	18.75	—	6.25	—
North Adams .	21,583	5	1	—	20 00	—	—	—
Chicopee . .	18,316	6	3	16.66	50.00	—	—	—
Medford . . .	17,190	7	2	2*.56	—	—	—	—
Newburyport .	15,636	13	1	—	47.14	—	—	—
Melrose . . .	14,721	11	1	27.27	9.09	—	9.09	—

Deaths reported 3,074; under five years of age 974; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 637, acute lung diseases 786, consumption 366, diphtheria and croup 77, measles 41, diarrheal diseases 29, whooping-cough 29, typhoid fever 26, cerebrospinal meningitis 25, erysipelas 24, scarlet fever 20.

From whooping-cough New York 22, Boston 3, Pittsfield, Washington, Fall River and Waltham 1 each. From typhoid fever Pittsburg 13, New York 7, Baltimore and Washington 2 each, Boston and Lowell 1 each. From cerebrospinal meningitis New York 14, Boston 5, Baltimore 3, Pittsburg, Providence and Newton 1 each. From erysipelas New York 18, Boston 3, Springfield 1. From scarlet fever New York 14, Boston 2, Worcester, Cambridge, Salem and Malden 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending March 31st, the death-rate was 21.4. Deaths reported 4,753: acute diseases of the respiratory organs (London) 469, measles 168, whooping-cough 146, diphtheria 80, diarrhea 38, fever 34, scarlet fever 29, small-pox (Liverpool and Hull 1 each) 2.

The death-rates ranged from 11.9 in Croydon to 36.8 in Wolverhampton: Birmingham 24.1, Bradford 18.6, Cardiff 19.3, Gateshead 15.7, Huddersfield 13.5, Hull 23.8, Leeds 23.1, Liverpool 31.3, London 20.3, Manchester 27.2, Newcastle-on-Tyne 17.6, Nottingham 17.6, Portsmouth 14.4, Sheffield 25.6, Sunderland 20.5, Swansea 16.3.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING APRIL 14, 1900.

F. W. OLCOTT, passed assistant surgeon, ordered to duty at the Naval Recruiting Rendezvous, Philadelphia, Pa.

SOCIETY NOTICES.

SUFFOLK DISTRICT MEDICAL SOCIETY, CENSORS' EXAMINATION. — The censors of the Suffolk District Medical Society, officiating for the Society at large, will meet to examine candidates for admission to the Massachusetts Medical Society at 19 Boylston Place, on Thursday, May 10, 1900, at 2 P. M.

Candidates should make personal application to the Secretary and present their medical diploma or its equivalent at least three days before the examination.

For further particulars apply from 2 to 3 P. M. to

HOWARD A. LOTHROP, M.D., *Secretary*,
10 Marlborough Street.

SUFFOLK DISTRICT MEDICAL SOCIETY. — The annual meeting, commemorating the fiftieth anniversary of the Society will be held at the Massachusetts Institute of Technology, Walker Building (corner of Boylston and Clarendon Streets), Room 22, Saturday, April 28th, at 8 P. M. Brief remarks pertaining to the formation, history and objects of the Society will be made by Drs. B. Joy Jeffries, A. T. Cabot, J. C. White, D. W. Cheever, J. C. Warren, Geo. B. Shattuck and H. L. Burrell.

Business: Report of the librarian and treasurer; election of officers; appointment of delegates to the annual meeting of the American Medical Association. Supper at the Brunswick after the meeting.

HERBERT L. BURRELL, M.D., *President*.
HOWARD A. LOTHROP, M.D., *Secretary*,
10 Marlborough Street.

AMERICAN GASTRO-ENTEROLOGICAL ASSOCIATION. — The Association will meet at "The Shoreham," Washington, D. C., May 1, 1900.

AMERICAN ACADEMY OF MEDICINE. — The twenty-fifth annual meeting of the Academy will be held at "The Shelburne," on the beach at the end of Michigan Avenue, Atlantic City, N. J., on Saturday, June 2, and Monday, June 4, 1900.

AMERICAN DERMATOLOGICAL ASSOCIATION. — The twenty-fourth annual meeting of the Association will be held at the Hotel Gordon, Washington, D. C., May 1, 2 and 3, 1900, in connection with the fifth triennial session of the Congress of American Physicians and Surgeons.

AMERICAN SURGICAL ASSOCIATION. — The meeting of the Association will be held at the Columbia University Building, Lecture Hall No. 2, Washington, D. C., May 1, 2, 3, 1900.

AMERICAN GYNECOLOGICAL SOCIETY. — The twenty-fifth annual meeting of the Society will be held in Washington, D. C., May 1, 2 and 3, 1900, at Columbian University.

AMERICAN OTOLOGICAL SOCIETY. — The thirty-third annual meeting of the Society will be held this year on Tuesday, May 1st, at the Arlington House, Washington, D. C., in connection with the fifth Congress of American Physicians and Surgeons.

FREDERICK L. JACK, M.D., *Secretary*.

RECENT DEATHS.

FRANK D. KIMBALL, M.D., twenty-four years of age, house surgeon at the City Hospital on Blackwell's Island, died on April 12th, from suppurative meningitis resulting from mastoid abscess. The latter was due to otitis incidental to an attack of influenza, which during the past season appears to have been attended to an unusual extent with deep-seated inflammations of the ear. Dr. Kimball was a graduate of Dartmouth College and of the Medical Department of the University of the City of New York.

GEORGE H. CONKLIN, M.D., the oldest practising physician in Suffolk County, N. Y., died at his home in Babylon, L. I., on April 12th, at the age of eighty-nine.

Original Articles.

SPLENIC PSEUDOLEUKEMIA: HISTORICAL SKETCH.[1]

BY R. C. CABOT, M.D., BOSTON.

Previous to the publication of Osler's 15 cases in the January issue of the *American Journal of Medical Sciences*, not more than 25 cases are on record. Although the disease had been described in 1867, and although Dr. H. C. Wood called attention to it in this country in 1871, the first systematic treatment of the subject was given by Banti in 1882. Banti's paper being published in Italian did not attract the attention it deserved. The revival of interest in this subject of late years is due to some extent, I think, to Dr. West's article entitled "Splenic Anemia."[2]

The term "splenic anemia," suggested by Gretzel in 1867, was a natural outcome of the terminology of a time when "lymphatic anemia" was a term used as a synonym for Hodgkin's disease. At the present time it seems as if we should either abandon the use of the term "splenic anemia" or else take up the term "lymphatic anemia" as applied to the association of lymphatic enlargements with impoverished blood, or, if we consider, as Osler does, that there is no relation between enlargement of the general lymphatic system with anemia and enlargement of the spleen with anemia, we ought to make a similar sharp distinction between the two varieties of leukemia. The only defence for the use of the term "splenic anemia" is that it does call attention to the two marked features of the disease, while the term "splenic pseudoleukemia" is much less significant. "Anemia with splenic enlargement" seems to me the best term.

In going over the literature of the subject it is very difficult to separate out the cases of leukemia and of enlargement of the spleen due to various causes like malaria or syphilis, and to distinguish all these from the symptom-complex which is our subject to-night; as, for example, in Dr. West's article in Allbutt's "System," a case is quoted in full as splenic anemia, which is obviously a case of leukemia. I have excluded, therefore, cases in which there was an obvious history of malaria, or in which the signs pointed strongly towards cirrhosis of the liver, or in which the blood examination was so imperfect as to make it impossible to exclude pernicious anemia. I have included only such cases as showed a marked anemia with considerable splenic enlargement, without any known cause either for the anemia or for the enlargement of the spleen, and with no leucocytosis. The symptomatology of such cases is simply that of progressive or relapsing anemia combined with the local disturbances and annoyances due to great enlargement of the spleen. Hemorrhage, however, seems to be more frequent a factor than in other varieties of anemia. In eight of Osler's 15 cases there were recurrent attacks of copious hematemesis, in another there was hematuria, and in another purpura. The gastric and intestinal hemorrhages, Osler thinks, are accounted for on mechanical principles.

In the great majority of cases reported the spleen has been considerably enlarged, but has rarely reached the size that we commonly see in advanced cases of myelogenous leukemia. It reaches usually to or not quite to the level of the navel. Perisplenitis seems to be relatively infrequent. The liver is usually somewhat enlarged, and occasionally the retroperitoneal glands have been found hypertrophied. The increase in the size of the spleen is due in most cases to fibrous hyperplasia, the Malpighian bodies being more or less atrophied. There is less pulp than usual. The surface is drier and firmer on section. The atrophy of the lymphoid follicles, which is reported in some of the very few autopsies which are on record (not more than a dozen in all), is important, if true, as it is the opposite of the condition usually found in leukemia and in Hodgkin's disease.

As to the liver, accounts vary. In some cases a slight degree of interstitial overgrowth is mentioned; in others a certain amount of lymphoid infiltration.

The account of the blood, as given in Osler's cases, is different from that which one finds in most of the earlier records, which accent the severity of the anemia, while Osler comments especially upon the resemblance to chlorotic blood.

As regards the duration of the disease, most of the cases reported previous to the appearance of Osler's paper have been of short duration, two to four years, while the latter author is impressed by the long duration of the disease and the frequency and duration of the intermissions. Several of his cases have lived over ten years.

In the *diagnosis* of the disease we have to distinguish:

(1) Cases of idiopathic splenic enlargement without any anemia or any other symptoms, which are not very uncommon.

(2) We must exclude pernicious anemia, in which a slight enlargement of the spleen is almost always present, and sometimes a very considerable one. In one of my own cases the spleen reached a hand's breadth below the navel. The diagnosis here depends upon the constitution of the blood, which, in the disease which we are now considering, presents characteristics of an ordinary secondary anemia or, as Osler says, of chlorosis. It should here be said that one may easily lay too much stress upon the distinction supposed to exist between the blood of chlorosis and that of secondary anemia. There really is no such distinction to be made. Chlorosis is simply a secondary anemia occurring in young girls without any cause that we can put our hands upon. The low color index, which certainly is a great feature of the blood of chlorosis, is found in any relatively mild case of secondary anemia.

(3) We must distinguish the disease from cirrhosis of the liver. Some of Osler's cases would undoubtedly have been diagnosed as cirrhosis by less competent observers. The association of anemia, ascites, hemorrhages from the stomach, and enlargement of the liver (or, as in one of Osler's cases, diminution in the area of liver dulness) would in many minds be sufficient for the diagnosis of cirrhosis, which would not be contradicted by the splenic enlargement, since a very considerable enlargement is itself a symptom of cirrhosis. The fact that a certain degree of interstitial overgrowth has existed in some of the post-mortem records makes this differentiation from cirrhosis all the more difficult. In cirrhosis of the liver we often have an anemia of very much the type described in Osler's cases. Altogether the differentiation be-

[1] Read at a meeting of the Boston Society for Medical Improvement, February 5, 1900.

[2] Allbutt's System of Medicine, vol. vi., 1898.

tween these two diseases *intra vitam* must be a very difficult one in many cases.

(4) Splenic tumor associated with chronic malarial poisoning must also be excluded. In some of Osler's cases there was a history of malaria, and by some observers the diagnosis of malaria would undoubtedly have been made. In persons living in a malarial district the absence of malarial parasites at any one period does not seem sufficient evidence for excluding a chronic malarial infection.

(5) From leukemia the disease may be easily and quickly distinguished by the blood examination.

(6) The anemias of children are very frequently associated with enlargement of the spleen, with or without leucocytosis, and their classification is still entirely unsatisfactory. As a rule such cases are associated with and usually considered secondary to rickets or syphilis, and the existence of either of these diseases would differentiate a case otherwise identical with Banti's disease.

Prognosis. — Different writers give us a very different idea of the prognosis of the disease. According to Osler, it would seem to be a relatively favorable one, some of his cases lasting twelve years or more being still in good health.

Treatment. — The operation of splenectomy was done in one of Osler's cases with apparently favorable results. It is a reasonable method of treatment, in view of the fact that splenic enlargement seems to have preceded the anemia in all the recorded cases in which the question has been looked into thoroughly.

SPLENIC ANEMIA.[1]

BY JOHN LOVETT MORSE, M.D., BOSTON.

I HAVE seen but three cases which seem sufficiently characteristic to be classified under the head of "splenic anemia." Two of these I will report, the third will be reported by Dr. Henry Jackson.

CASE I. Walter D., age seven years, was seen with Dr. W. A. Morrison, of East Boston, February 19, 1896. There was no syphilitic or alcoholic history. He was nursed and was healthy until six months old. After that he had more or less digestive disturbance. He got his teeth late, but walked at eighteen months. He had not been well since his third year. The chief symptoms had been gastric, associated with pallor and weakness. He suffered from dyspnea on exertion and at times his feet were a little swollen. There had been no hemorrhages at any time. He was noticeably pale. His head was large, his teeth poor. There was a slight rosary. The lungs were normal. The heart was slightly enlarged to the right, but the action was regular and strong. There was a systolic murmur over the whole precordia, loudest at the base. The second pulmonic was not accentuated and there was a venous hum in the neck. The abdomen was somewhat large but soft. The liver flatness began above at the fifth rib in the nipple line. The edge was felt an inch and a half below the costal border. The spleen could be felt distinctly running out from beneath the ribs in the nipple line, then toward the umbilicus, extending downward below the pelvic brim. The posterior border could also be easily made out. The surface was smooth and the edge fairly sharp. It was slightly tender on deep pressure. There was no glandular enlargement.

BLOOD.

Hemoglobin	57 per cent.
Red corpuscles	3,400,000
White corpuscles	5,200
Small mononuclear	16 per cent.
Large mononuclear	5 "
Polynuclear neutrophiles	76 "
Eosinophiles	3 "

No abnormal white cells; fairly numerous microcytes and macrocytes. Moderate poikilocytosis; no nucleated forms.

I saw him again February 3, 1900; he was then eleven years old. He had improved a great deal in general condition, but was still unable to exert himself without some dyspnea. There was no longer any swelling of the feet. His appetite and digestion were good. He was slightly jaundiced at times, but never had clay-colored stools. He had had nose-bleed several times but no other hemorrhages. He was in good general condition, but undersized. He was decidedly pale, with a slightly yellowish tinge. The conjunctivæ were slightly yellow. The condition of the heart was as before. The liver flatness began above at the fifth space in the nipple line. The edge was just palpable at the costal border. The spleen could be felt distinctly running out from beneath the ribs in the nipple line, downward to about the level of the iliac crest and then backward and upward. The surface was smooth and the edge sharp. It was not tender. There was no glandular enlargement. Physical examination was otherwise negative.

BLOOD.

Hemoglobin	52 per cent.
Red corpuscles	3,128,000
White corpuscles	6,520
Small mononuclear	22 per cent.
Large mononuclear	2 "
Polynuclear neutrophiles	75 "
Eosinophiles	1 "

No abnormal white cells; considerable variation in staining of red corpuscles; marked variation in size, but no special tendency to large or oval forms; moderate poikilocytosis; no nucleated forms. It is noteworthy that this examination of the blood differed in no essential particular from that made four years earlier.

In the light of the early history the splenic tumor in this case may be considered the relic of some infantile condition, for, as is well known, anemia with splenic enlargement is not at all uncommon in infancy. Moreover, splenic tumor is a frequent accompaniment of rickets, which this boy undoubtedly had. While it is impossible to say that this is not the case, I feel very sure that it is not. Most of the cases of anemia with great enlargement of the spleen in infancy die early. In those that recover the spleen diminishes rapidly in size and probably in the course of years is but little, if any, larger than normal. The same thing is true of the splenic enlargement in rickets. I think, therefore, that the splenic tumor in this case may be regarded as of comparatively recent development. The persistence of the anemia would also seem to rule out any infantile condition. The improvement in this general condition, the unchanged condition of the blood at the end of four years, the absence of new symptoms, seem sufficient to rule out pernicious anemia, leukemia and Hodgkin's disease. The history of clay-colored stools, the enlargement of the liver at the first examination and the occasional slight jaundice suggest some disease of the liver, especially cirrhosis. The absence of

[1] Read at a meeting of the Boston Society for Medical Improvement, February 5, 1900.

cause, the age of the patient, the duration of the disease and the absence of other symptoms of hepatic or portal obstructions render this condition improbable, although it cannot be absolutely ruled out.

CASE II. Mrs. L., thirty-seven, was referred to me in May, 1899, by Dr. L. C. Jones, of Malden, for an examination of the blood. She had always been subject to fainting attacks. She had been married four years, had no children, but had contracted syphilis. For this she had had fairly thorough and persistent treatment. During the summer of 1898 she nursed her mother through the last stages of cancer of the uterus. The odor was very foul and she was much pulled down by her efforts. Shortly after, her throat became very sore and a gland in the right side of her neck swelled. The sore throat was of short duration, but the gland persisted. There is a bad tooth on that side. During the winter of 1898-99 one of the inguinal glands enlarged but later disappeared. In February, 1899, she had a very severe attack of pain in the left abdomen. Dr. Jones discovered the spleen at that time in making an abdominal examination. It was as large then as in May. The spleen had remained more or less tender and she had had several attacks of very severe pain in that region. She had not felt as usual since the first attack of pain, but had had no very definite symptoms. Her digestion had been good. Her bowels, however, had been constipated, although they had never troubled her previously. There had been no symptoms of hemorrhage except that on several occasions the stools had been black without known cause. She had not lost weight. The fainting attacks were no more frequent than before.

She seemed in fair general condition and was able to superintend a large business. The abdomen only was examined. The spleen could be felt projecting outward from under the left costal border about six inches. It was about one or two inches thick. The edge was rounded and a definite notch could be made out. It was somewhat movable and pressure caused pain in the back. The liver was not enlarged and the kidneys were not felt.

BLOOD.

Hemoglobin	65 per cent.
Red corpuscles	4,488,000
White corpuscles	8,080
Small mononuclear	25 per cent.
Large mononuclear	5 "
Polynuclear neutrophiles	66 "
Eosinophiles	4 "

No abnormal forms of white corpuscles; very slight morphological changes in the red corpuscles; no nucleated forms; no plasmodia.

Dr. Jones writes me that she has kept up vigorous antisyphilitic treatment and that her general condition has improved. The spleen has not increased or diminjshed in size. She has had had no more attacks of pain and no new symptoms have developed.

It is possible that in this case both the anemia and splenic tumor may be of syphilitic origin. The attacks of pain were probably due to a twist of the pedicle.

Anemia of various grades of severity, with enlargement of the spleen, with or without leucocytosis, is not at all uncommon in infancy. It is especially common in rickets. In these cases the splenic tumor seems of no especial diagnostic significance, as great enlargment of spleen is often found when there is but little anemia, and great anemia when there is but little enlargement of the spleen. The splenic tumor and anemia seem independent of each other and are both probably the results of some common cause. In infancy the common cause is apparently always some profound, complicated and obscure disturbance of the nutrition. Reasoning from analogy I am inclined to think that in the same way these unusual cases of anemia and splenic enlargement in adult life may be due to obscure disturbances of nutrition. For the same reason I am also inclined to think that the enlargement of the spleen and the anemia are independent of each other, both being the results of some common cause. That such cases exist there can be no doubt, and until we know more as to their etiology there seems to be nothing better to do with them than to call them cases of "splenic anemia," or, better, "anemia with splenic tumor."

SPLENIC ANEMIA.[1]

BY HENRY JACKSON, M.D., BOSTON,
Assistant Visiting Physician, Boston City Hospital.

A YOUNG man of about twenty years entered my service September 11, 1896. All his family were well and there was no family history of hemophilia. He had always been delicate and rather pale; on his left leg was a large birth mark, with marked prominence of the veins. Little hemorrhagic vesicles formed at times on the surface of this birth mark, and their rupture gave rise to a frequent though slight loss of blood. There was no personal history of rheumatism or venereal disease. For three years before his entrance to the hospital he had done but little work. He dated his ill health from the time a tooth was extracted which was followed by a profuse hemorrhage. In 1893 he had bleeding hemorrhoids and was confined to the house for a good part of the summer on account of weakness and palpitation. In the summer of 1895 he had a similar attack.

On entrance his chief symptoms were weakness, marked palpitation and dyspnea on slight exertion, headache and vertigo at times.

Physical examination. — Fairly well nourished. Pallor of the skin and mucous membranes. Heart negative except for a slight systolic murmur, believed to be hemic in origin. Lungs negative. Spleen, dulness from the eighth rib to just below the costal margin, where the edge was plainly felt, smooth and rather hard. Urine negative.

Red cells	4,000,000
Hemoglobin	20 per cent.
Polymorphonuclear neutrophiles	61 "
Lymphocytes	29 "
Large mononuclear and transitional forms	8 "
Eosinophiles	2 "

In counting these one normoblast; slight variation in size and shape.

During September there was no great change in his condition; weakness and dizziness were marked features; slight bleeding from hemorrhoids. October 15th the following blood examination was made by Dr. J. L. Morse:

Reds	4,590,000
Whites	5,000
Hemoglobin	25 per cent.
Polymorphonuclear neutrophiles	54 "
Large and transitional forms	16 "
Small lymphocytes	28 "
Eosinophiles	2 "

[1] Read at a meeting of the Boston Society for Medical Improvement, February 5, 1900.

Large proportion large mononuclear; no myelocytes; red corpuscles, as a rule, nearly of same size; occasional macrocyte and microcyte. Very little poikilocytosis.

About the end of October he was discharged rather improved as to general condition. After his discharge I saw him occasionally. He improved markedly, had a good color, and was able to do hard work as an attendant to an idiotic boy.

I saw him again when he was in the hospital last November, on account of sloughing hemorrhoids. He was then very sick for several weeks.

January 27, 1900. I saw him at his home. He then felt well; had no trouble from the hemorrhoids; had no palpitation. Examination of heart and lungs negative; spleen somewhat enlarged, as on examination in 1896.

Reds	5,200,000
Whites	3,400
Polymorphonuclear neutrophiles	73 per cent.
Lymphocytes	17 "
Large and transitional forms	8 "
Eosinophiles	2 "

In 1896, in view of the enlargement of the spleen without any evident cause, splenic anemia was considered. I considered secondary anemia dependent upon the slight but long continued hemorrhages as rather more probable, while Dr. Morse favored the diagnosis of splenic anemia.

At the present time he is not anemic, and yet the spleen remains of the same size as in 1896; therefore the diagnosis is to my mind still obscure, but, on the whole, I feel that Dr. Morse was more correct than I was in his view of the case.

With the exception of the one case quoted I have not found in the records of the City Hospital a case of splenic anemia. To determine, if possible, whether cases had not been recognized as splenic anemia, I have examined all the cases that I could find entered under the head of Hodgkin's disease, splenic leukemia, pseudoleukemia and pernicious anemia. In the cases diagnosed as Hodgkin's disease and pseudoleukemia there was in each instance great enlargement of the lymphatic glands, as well as enlargement of the spleen; further, in each case the analysis of the blood when made substantiated the diagnosis. In the cases of splenic leukemia the blood examination made the diagnosis positive.

I find 40 cases of pernicious anemia; in all the clinical history is such as to corroborate the diagnosis. In the cases admitted during recent years the blood analysis confirms the diagnosis made from the history and the physical signs. The spleen was found to be negative in 30 out of the 40 cases; in 10 cases it was enlarged, though in nine cases the enlargement was slight, the spleen being just palpable at the edge of the ribs. In the tenth case the spleen was very large. Autopsy showed that the spleen weighed 795 grammes, the normal weight being from 150 to 200 grammes; but in this case the history of an acute anemia of five months' duration and the examination of the blood leave no doubt at the correctness of the diagnosis of pernicious anemia.

The résumé given makes me confident that very few, if any, cases of splenic anemia have entered the Boston City Hospital. It is to be hoped that with the active interest now being manifested in the subject still more careful observations may be obtained in the future.

A CASE OF SPLENIC ANEMIA.[1]

BY JAMES MARSH JACKSON, M.D., AND GEORGE SUMNER HILL, M.D., BOSTON.

A. S., age twenty-eight years, born in Armenia, married, occupation housework, entered the Out-Patient Department of the Massachusetts General Hospital December 26, 1899.

Family history. — Father died of pneumonia at the age of forty-five; mother, one brother and sister alive and well.

Catamenia at fourteen years; always irregular, frequently not appearing for two or three months; flow slight and not painful. Two children; one died at age of twelve months. Other at age of seven years died suddenly after an attack of diarrhea and vomiting. No miscarriages.

Habits. — Tea, two cups a day; seldom drinks coffee; small amount of alcohol, but not a regular drinker.

Previous history. — No children's diseases. At age of eighteen years commenced to have convulsions, which lasted thirty minutes; attacks occurred two or three times a day; at times passed over periods of a week without them; these attacks occurred in springtime. Has bitten tongue, broken teeth, foamed at the mouth, and had general muscular spasm. Appetite and bowels usually all right.

Present illness. — Two and one-half years ago had a sharp pain in left side at about costal border; the pain kept her awake. At this time she noticed mass growing in side. The pain has come on at irregular intervals since. Has had palpitation, but no dyspnea. Lost about fifteen pounds in weight. Has noticed no loss of color. Has coughed up about one-half cupful of blood five times, but has noticed none in stools. Has headache, dizziness, ringing in ears. Bowels alternate from diarrhea to constipation. No swelling of limbs or urinary symptoms.

Physical examination. — Well developed and fairly well nourished; slightly pale; no glandular enlargement; throat and mouth negative; reflexes normal. Nothing wrong found with chest and heart save systolic murmur heard all over precordia. Abdomen rather full, especially on the left side; the walls are rather flabby. Liver dulness commences at the lower border of fifth rib, and extends a hand's breadth below costal border; edge palpable and smooth, not tender. On the left side is a mass extending from the seventh rib diagonally across to umbilicus, and then toward right anterior spine; dulness extends over into left flank and back and down to crest of iliac bone on left side. The mass descends slightly with inspiration; edge (right) is notched twice; otherwise mass is perfectly smooth. The rest of abdomen is soft, tympanitic and not tender.

BLOOD.

Reds	4,076,000
Whites	5,200
Differential count	500 cells
Polymorphonuclear neutrophiles	36.2 per cent.
Lymphocytes	58.7 "
Myelocytes	4.5 "
Eosinophiles	.6 "

Two normoblasts seen. Corpuscles are rather pale and show considerable variation in size, but very slight poikilocytosis:

[1] Read at a meeting of the Boston Society for Medical Improvement, February 5, 1900.

December 28, 1899.	Whites, 5,400	Reds, 4,256,000
January 6, 1900.	" 5,300	" 3,880,000
January 13, 1900.	" 5,400	" 3,198,800
Hemoglobin	75 per cent.	
Differential count	500 cells	
Polymorphonuclear neutrophiles	45.2 per cent.	
Large lymphocytes 19.6 per cent. / Small lymphocytes 31.8 per cent.	51.4 "	
Eosinophiles	3. "	
Myelocytes	.4 "	

No nucleated reds seen. Quite a variation in size of red corpuscles, majority of normal size, but many of small size, and rarely a very large corpuscle. The corpuscles are stained well, and do not seem to tend toward poikilocytes.

Patient entered Massachusetts General Hospital January 23d, in the service of Dr. Fitz.

Counts made by Dr. Waterman at hospital January 25, 1900:

Whites	7,800
Reds	3,693,000
Hemoglobin	53 per cent.
Differential count	500 cells
Polymorphonuclears	36 per cent.
Small lymphocytes 56.2 per cent. / Large lymphocytes 5.4 per cent.	61.6 "
Eosinophiles	1.2 "
Myelocytes	.6 "
Mast cells	.6 "

No nucleated reds seen; reds rather pale, moderate variation in size, little irregularity in shape. February 1, 1900:

Whites	5,750
Reds	3,760,000
Hemoglobin	55 per cent.
Polymorphonuclears	42.01 "
Small lymphocytes	52.5 "
Large lymphocytes	4.8 "
Eosinophiles	.3 "
Myelocytes	.1 "

No nucleated reds seen. Corpuscles show same characteristics as in former count.

Clinical Department.

MASSACHUSETTS GENERAL HOSPITAL. CLINICAL MEETING OF THE MEDICAL BOARD.

Regular meeting, February 17, 1900, Dr. C. B. Porter in the chair.

Dr. A. K. Stone showed a case of

PELVIC GUMMA.

The case had presented herself in July, 1897, and the tumor found and diagnosed as osteosarcoma. As the tumor appeared to be inoperable, potassic iodide was given, and almost immediately there was improvement in the general condition, and within a couple of months complete disappearance of the tumor. At the present time, a year and a half afterwards, there is no tumor and the patient is well and strong, doing her own work, and considering herself well.

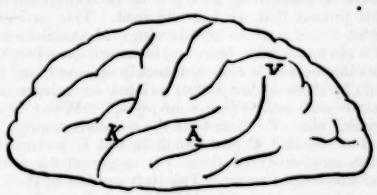
A similar case, still under observation, has presented itself this winter at the clinic.

Dr. G. L. Walton showed a case of

SUBCORTICAL MOTOR APHASIA.

I will remind you that for the complete exercise of the faculty of speech the integrity of quite an extensive portion of the cortex is essential. It is also necessary that the fibres connecting the cortical centres be unimpaired, and finally that the afferent and efferent fibres be in condition to transmit stimuli to and from the brain. The three most important cortical centres to be investigated are: (1) the centre for visual memories, including that for words; (2) the centre for sound memories, also including the sounds of words, and (3) the so-called kinesthetic centre, or the centre in which are stored memories of the mechanical processes, that is, of the movements of the lips, tongue, larnyx and other parts involved in speech. The first of these centres is situated in the angular gyrus, the second in the first temporal lobe, the third in Broca's convolution (V, A and K, in diagram). Whether a special writing centre exists at the base of the second frontal convolution need not concern us for the purposes of the present simple and practical demonstration.

In the majority of cases met with in practice more than one of these cortical centres and more than one variety of connecting fibres suffer; an occasional case presents itself, however, illustrating a single type of lesion. This young woman shows one of these types, namely, destruction of the efferent fibres passing to the bulb from Broca's convolution (whether directly or by way of the centres for actual movements, at the fissure of Rolando, we need not discuss for the purposes of this demonstration). The patient is now twenty-three years of age. At the age of eleven she had typhoid fever, in the course of which an attack of hemiplegia occurred, involving her right side, and destroying the power of speech. She has only recovered the use of the words "no" and "mamma." This lesion was probably thrombosis, not hemorrhage, as cerebral complications of acute infectious diseases result from morbid blood states rather than from diseased arteries.



First, testing her visual centres, I show her my watch and ask her the time, which she correctly indicates by holding up first five, then three fingers of the left hand. This simple test shows not only that she sees the watch but that she appreciates its use and is able to interpret correctly what she sees, that is, there is no "mind blindness." To test her vision for words I point out the printed word *child* and ask her to indicate its meaning, in response to which she holds her hand at a short distance from the ground to indicate a child's stature. In previous tests I have asked her the meaning of the words *wheel*, *book*, *skirt* and *collar*, which she has shown by appropriate gestures. She has therefore no "word blindness," that is to say, the angular gyrus is intact.

Similarly investigating the auditory centre, I tell her to close her eyes, then I put the watch to her ear, and then replace it in my pocket, telling her to open her eyes and indicate what she heard. She at once makes a circle with the thumb and finger, then points to my watch chain. This test shows that she not only hears but appreciates what she hears; still

further, it shows the integrity of the fibres connecting the auditory with the visual centre, inasmuch as the *sound* brought to her mind the *picture* of the watch. Proceeding to test her auditory capacity for words, I ask her to close her eyes, put out her tongue, show her teeth, being careful not to aid her by making these movements myself; she responds promptly and accurately. To give her a rather more difficult test in the same line, I ask her if she can find the article she has been reading in the magazine; she takes up the magazine and turns to the article without hesitation. We have now demonstrated the fact that she has no "word deafness," in other words, the temporal region is unaffected.

The test for demonstrating the integrity of the so-called kinesthetic centre is more difficult, for it is very hard to determine with certainty whether she has the capacity for calling up the memories of the muscular movements required for speech, since she is absolutely unable to make these movements in the slightest degree. She cannot even make them when I pronounce the words for her and ask her to repeat them. Clinical and pathological study seem to have established the fact, however, that the patient's power of reading to herself, and understanding what she reads, shows that this centre is spared, such reading probably requiring not merely a visual recognition of the words, but a power of calling up the memory of the motions made in articulating them; it is, in reality, through this process that we learn to read. This patient in point of fact reads to herself with evident satisfaction; it is obviously wise, however, to assure ourselves that this intelligence is real, not simply apparent, and this I do by showing her simple printed or written commands such as, "Close your eyes," "Where is the watch," etc. To these tests she responds readily.

The so-called Proust-Lichthein test is perhaps the most satisfactory of those yet suggested for testing the kinesthetic centre. This test consists in showing the patient a word and asking her to indicate the number of syllables and the number of letters, the supposition being that this action necessitates the mental reproduction of the muscular movements. I accordingly show her the word *child* and ask the number of letters, upon which she promptly holds up five fingers. I now try a similar test without even showing ing her the word; I hold up a pen and ask her if she knows its name; she nods her head. Without repeating the word myself or showing it to her, I ask her to spell it to herself and indicate the number of letters; this she does by holding up three fingers. The act of spelling, even silently, is probably done — to put it rather crudely for the sake of simplicity — by making the necessary movements in the mind even though these movements are not externalized.

The patient can write her name though she cannot pronounce it. This is done with the left hand, the right being practically helpless as a result of the hemiplegia. The ability to write probably demonstrates the integrity of Broca's convolution and of the fibres passing from this convolution to the writing centre, so-called, probably not a special centre, but the centre for the movements of the fingers, in this case on the right side of the brain. This question is still in dispute, and its discussion need not delay us at this time.

We have now by simple and easily accessible tests demonstrated the integrity of the cortical centres involved in speech, and of the connecting fibres. There remains only the collection of efferent fibres already mentioned as conveying the motor impulse from Broca's convolution to the bulb. A sufficient number of autopsies have been made on cases resembling this one to demonstrate the fact that a comparatively small spot of softening interrupting these fibres anywhere in their course from a point directly below the cortex to the level of the internal capsule suffices to produce this type of aphasia; and this is doubtless the character and seat of the lesion in this case. Various names have been given this variety of speech defect, for example, aphemia, fascicular anarthria and subcortical motor aphasia, the latter term being perhaps the most satisfactory.

A practical advantage of distinguishing this from other forms of aphasia concerns the question of testamentary capacity. The intellectual processes concerned in speech in such a patient are intact; we may therefore rely upon his gestures in answer to our questions as to persons and amounts, though he can neither speak nor write.

Dr. C. W. Townsend showed a woman with

CYANOSIS FROM CONGENITAL CARDIAC DISEASE.

I showed this woman here in November, 1897, together with two other cases of congenital cyanosis due to congenital disease or malformation of the heart. Last August this patient had a baby at the Lying-in Hospital and I brought her to-night because I think it is a very unique case of a woman with congenital cyanosis giving birth to a living child. I have not been able to find a similar case in literature. She has had two children before this, each born a month prematurely, and both failed to live. This child was born at full term. The mother went through a normal pregnancy, was able to walk about as well as any one, and gave birth to this baby — eight pounds and six ounces — six months ago. Her labor lasted eleven hours and showed nothing unusual, and there was no exhaustion, although cyanosis was very marked. Pulse 84 before delivery and 80 after delivery. She has nursed the baby ever since, and, as you see, the baby is healthy looking and shows no evidence of congenital heart disease. The woman herself is decidedly cyanotic, her lips and fingers being always blue and her face having the characteristic dusky tint. The mucous membranes of the mouth and vagina are markedly blue. She was in the hospital here for a time, coming first to the Out-Patient Department. Examination of the patient shows no enlargement of the heart, and although there is at times a systolic murmur at the base, it is absent most of the time. The absence of murmur does not of course vitiate the diagnosis of congenital heart disease. I have followed up 29 cases of congenital cyanosis, seen mostly at the Children's Hospital, and found a heart murmur present in 18, absent in 11. In three cases there were autopsies, and, notwithstanding the absence of murmur during life, the autopsy showed marked malformation of the heart. In two cases there was a narrowing of the pulmonary artery, with large ductus arteriosus, associated in one case with a large foramen ovale; the third case had a deficient ventricular septum, so that the heart was practically a heart with three cavities, a ventricle and two auricles.

The condition of the blood in these cases is extremely interesting. I have had blood counts made

in some 13 cases by Drs. Robey, Potter and Capps. In all these cases of cyanosis — and it is also the case in acquired cyanosis from any cause — there is an increase of the number of red blood corpuscles. In this patient the increase is, however, very slight over the normal, 5,000,000, the count taken last September showing 5,632,000. I will read the blood counts in the other cases, as I think they are extremely interesting: 6,570,000, 11,800,000, 9,000,000, 5,955,555, 7,592,129, 8,051,111, 6,577,777, 7,144,400, 6,586,640, 5,115,000, 6,000,000, 8,595,000. The two latter counts are from patients shown here in November, 1897.

Dr. Townsend in reply to questions said that this patient had no constant discomfort or dyspnea, that she could walk and do her work perfectly well. The compensation seems to be perfect notwithstanding the constant presence of the cyanosis.

Dr. F. C. Shattuck reported a case of

ADENOCYSTOMA OF THE LIVER.

Mrs. T., sixty-three years old, mother of seven children, the youngest twenty, was referred from the Out-Patient Department to the wards for diagnosis, entering December 12, 1898. About eighteen months ago she noticed an abdominal enlargement, painless and not tender. During this period she had several attacks of some weeks' duration and with chilly sensations and anorexia, and about once a month she has passed blood per rectum, estimated at four to six ounces in amount each time. The general health had not been much impaired, and, though she was thin, her color was fairly good.

The abdominal enlargement was more marked in the right and upper abdominal segments. From the right iliac crest to the costal border a smooth, non-tender mass could be felt, not seeming to extend into the flank. Over the upper and central portion of this mass there was a fluctuant area about the size of the palm of the hand. The blood, urine and thoracic viscera were normal. No positive diagnosis was made. Hydronephrosis, hydatid and ovarian cyst were considered possible. I was inclined to think the fluctuant area due to an encysted peritonitis complicating one of the above-named conditions. An adenocystoma of the liver never occurred to my mind. Indeed, I did not know that they ever attained any such dimensions. Operation was advised and consented to. Dr. Porter will describe it and its results.

Operation.

Dr. C. B. Porter: Under ether an incision was made from the ensiform cartilage to the umbilicus through the right rectus abdominis. The abdominal wall was very thin. On opening the peritoneal cavity a smooth dark-red tumor presented itself, filling the whole right half of the abdomen. The greater part of the mass was solid, but two inches below the right costal margin the tumor became fluctuant and the whole right hypochondrium was evidently filled by a tense cyst. The intestines were walled back with gauze and a large trocar inserted into the cyst about three inches below the tip of the xiphoid cartilage. A nearly colorless fluid gushed out until a basin had been filled. Pressure on the abdominal walls expressed about as much more. The cyst wall was stitched to the abdominal wound, and an incision made into it about three inches long. This revealed a large cavity occupying the normal position of the liver. Further examination showed that the cyst arose from the superior surface of the liver and that this organ, pushed downwards by the cyst, constituted the greater part of the mass previously felt in the abdomen. In all, about a gallon of fluid was removed. The sac was thin and firmly adherent to the surrounding tissues, like a retention cyst, and bore no resemblance to the laminated wall of an echinococcus cyst. After the opening of the cyst had been carefully sutured to the abdominal parietes, two large rubber drainage tubes were carried to the bottom of the cavity towards the pelvis, and two gauze wicks were passed upwards under the ribs.

The patient made a good recovery from the operation. It was noteworthy that at the dressing on the following morning the liver had risen from the pelvis, so that its lower border was opposite the umbilicus. The direction of the drainage tubes, which at the operation passed obliquely downwards, was already directed upwards and backwards towards the diaphragm. The liver rose higher day by day, and ten days after operation occupied relatively its normal position. The slow, sanguineous discharge was very profuse for several days. Tincture of iodine, one drachm to one ounce of water, was therefore injected into the sac at intervals. This was followed by slight fever, but no change in pulse-rate. The cyst rapidly contracted, and in two weeks contained only a few ounces.

One month after operation the tubes were removed, and in two weeks more the patient left hospital. A small sinus remained discharging only a few ounces in the twenty-four hours. Subsequently the fluid increased in amount and became bile-stained; one and a half pints drained away in the day. Two days after an unsuccessful operation to close this sinus, the patient suddenly died of heart failure. Examination showed that the cyst had arisen close to the suspensory ligament, and had pressed the liver down as it grew. Dr. Whitney's diagnosis of the first operation was entirely confirmed. As the case is one of unusual rarity, it will be soon reported in further detail.

Microscopic Appearances.

Dr. Whitney: Dr. Porter removed for examination a small piece of the cyst wall, which was hardened and examined and is under the microscope. You can see it is a fibrous structure in which there are duct tubes and larger tubes and also what are apparently small commencing cysts. This formed the wall through which Dr. Porter went and there was no liver substance proper in it, but simply new-formed bile-ducts in this mass of fibrous tissue. The condition evidently corresponds closely to the one described by Sigmund[1] as adenocystoma of the bile-ducts, which he looks upon as new formation of bile-ducts analogous to that in the condition of multilocular cystoma of the ovary. He has had an opportunity of examining one case at an autopsy. His plates show the liver and the microscopic sections of the new-formed bile-ducts which he found in the walls of these various cysts, which were chiefly confined to one-half of the liver. In his case the largest cyst is by no means anything as large as in the case of Dr. Porter. It is probably multiple, and it is possible, also, that in this case there may have been other and

[1] Virchow's Archiv, Bd. 115.

smaller cysts. The cyst wall was lined with the same sort of epithelium that clothes the small new-formed ducts, and there is every reason to think that this cyst was of the same character as Sigmund's. It is to be regarded not as a simple retention cyst, but new formation of gland tissue with the formation of a cyst, a veritable cysto-adenoma. There are a number of cases of large cysts of the liver, one which held two gallons, and one in which there was a tumor the size of a child's head, but in none of them was a sufficiently careful microscopic examination of the cyst wall made to fully identify its character. In the fluid there was a small amount of mucin found, but none of the bile characteristics, showing that the liver had no connection at all with this form of cyst, and that the fluid had been secreted by the wall.

DR. F. C. SHATTUCK reported a case of

PERIGASTRITIC ADHESIONS CAUSING INDIGESTION AND GASTRIC DILATATION.

B., twenty-nine, a farmer and painter, was referred from the Out-Patient Department to the wards, entering December 21, 1898. Essentially the above diagnosis had been made by his physician, Dr. Desmond, of Concord, and in the Out-Patient Department. Three years ago he had an attack of pain in the right hypochondrium, and vomiting, lasting about three weeks. Two years ago he had a second and similar attack. One year ago he had abdominal pain and wrist-drop. Three months ago he had "inflammation of the bowels," pain in the right upper abdomen, persistent vomiting, and the bowels did not move for many days. Fever is said to have been absent. He was in bed four weeks, and has not been well since; suffering from pain, gastric distress, and occasional vomiting, loss of weight and strength. The stomach held 88 ounces, and extended well below the navel when inflated. It was not possible to get satisfactory gastric contents after a test meal until the 25th. Free hydrochloric and lactic acids were found, the former .87 pressure per inch. There was no digestive leucocytosis.

The next day or two he suffered much from abdominal pain requiring morphia for its relief, ate almost nothing and was losing so rapidly that operation was urged and declined by him December 29th. The next day, however, he changed his mind and was transferred to Dr. Porter.

Operation.

DR. C. B. PORTER: Under ether anesthesia an incision was made below and parallel to the right costal margin from the median line outwards for six inches. On opening the peritoneal cavity, the stomach was easily recognized and was drawn up into the wound. The pylorus was found to be very firmly adherent to the gall-bladder and adjacent under surface of the liver and could not be moved until these adhesions were divided. Several adhesions near the attachment of the lesser omentum were particularly firm and required division, after being tied in sections with animal tendon. At length the pyloric end of the stomach was made freely movable. The pylorus seemed thickened, so it seemed best to open the stomach and investigate its calibre before going further. An opening two inches long was made in the anterior wall of the stomach, about four inches from the pylorus. The index finger, introduced through this wound, easily passed through the pylorus; nothing abnormal could be felt, and it was therefore evident that no stenosis of the pylorus existed, but that the interruption to the exit of stomach contents had been due to the adhesions *outside* of this part of the stomach. The edges of the incision in the stomach were sewed with a continuous catgut suture, to hold all the layers together and prevent infiltration between them, and then the wound was closed with continuous and interrupted Lembert sutures. The abdominal wound was sutured without drainage in the usual manner.

From the time of operation the patient made a continuous and practically uninterrupted recovery, with such marked relief from his previous pain that the contrast was most striking. He left the hospital a month later.

This case was a most instructive one, and shows the great value of an exploratory operation, for the symptoms — loss of forty pounds in four months, dilatation of the stomach and vomiting — would arouse suspicion of malignant disease of the pylorus, yet the operation and its results proved that the obstruction was solely due to the pressure of adhesions upon the pylorus.

In the absence of DR. CABOT, DR. WHITNEY showed the specimens from a case of

DOUBLE EXTRA-UTERINE PREGNANCY.

Dr. Cabot opened the abdomen and removed a mass which lay just in the median line wrapped up in the omentum. It was made up of the more or less macerated mummified bones of a small fetus, which must certainly have been between the third and fourth months judging by their size. Then he removed the tube and ovary on the right side, thinking that was possibly the whole cause. The ovary contained a large corpus luteum, and in the tube he was unable to find evidences of chorionic villi. Into the other mass, which was behind and to the left of the uterus, he put his hand, and through the blood clots extracted a fetus, about three and one-half months, which at the time was alive. The other tube and ovary were not seen. This is a case of double ectopic gestation, one considerably antedating the other. Four days after the operation the woman passed spontaneously from the uterus the decidua, of which a drawing has been made. The question of the decidua is interesting, as it is claimed that in these cases it is not cast off from the uterus except at the death of the embryo or fetus. In this case it was so, as the fetus was alive at the time of the operation and this was expelled three days after a living fetus was taken away.

DR. J. C. WARREN reported a case of

PERFORATING GASTRIC ULCER; OPERATION; DEATH.

J. M., forty years of age, single, born in Ireland, lives in Winchester, brought to the accident room December 26, 1898, with a history of several attacks of acute abdominal pain during the last five weeks; for two days had been in bed; there was abdominal pain, especially in the epigastrium, and frequent vomiting; bowels not moved. Abdomen tender, tympanitic and rigid, especially tender in the right hypochondrium. The patient came to the hospital at two o'clock in the afternoon, and I saw him at the end of my morning's work in the accident room.

On examination, with the brief history of the case which I have just given to you, it seemed to me that

possibly the attack might subside with rest and nursing, as it had in a case with similar symptoms which I had seen a short time before outside the hospital, upon which I had been prepared on three different occasions to operate, but which got well without operation. On the next morning, December 27th, suddenly conditions changed for the worse — persistent vomiting; pulse went to 140. Dr. Shattuck not being in the hospital at the time, I asked Dr. Fitz to see the case with me, and he felt that there was local peritonitis in the right upper quadrant and that the origin of it was doubtful. On seeing the patient myself, soon after Dr. Fitz, I found his condition was a very serious one. He was vomiting large quantities of green fluid, the abdominal walls were very rigid, and the pulse had gone from a comparatively normal condition up to 140.

The patient refused to be operated on immediately, as he had to have his will made and had to see some friends. I came back in the afternoon, and after waiting some time we were finally allowed to operate. At that time I had come to the conclusion that there was a perforating ulcer of the stomach. An opening was made in the right linea semilunaris, and evidences of general peritonitis, large flakes of lymph and a creamy fluid were seen everywhere. On following up the signs of acute inflammation we came to the stomach, slitting up the linea semilunaris, and found gas and a greenish vomitus pouring out from a hole in the stomach near the pylorus. The opening was about the size to admit the stem of an ordinary wooden pencil. The hole was immediately isolated as much as possible with gauze, and sewed up rapidly with Lembert sutures in order to check the free flowing that was coming through it. The stitches were afterwards reinforced. The abdomen was thoroughly washed out with normal salt solution, and gauze wicks were passed into the pelvis and up towards the seat of the operation. At this time the patient's condition was very bad. He was carried to his room and died during the night. Unfortunately no cultures were taken from the abdomen.

Dr. F. C. Shattuck reported a case of

PERFORATING GASTRIC ULCER SIMULATING APPENDICITIS.

A teamster of nineteen came to the accident room about 10 P. M., January 11, 1899. A week ago he had an attack similar, as he thinks, to the present one, but less severe. The pain was epigastric. Went home to bed and slept it off. About 8.45 at night he was seized with very severe epigastric pains. He went to a drug store and fell on the floor; not faint, but collapsed with pain. Vomited twice while being brought from the druggist's to the hospital. On entrance he collapsed and suffered severely. Temperature subnormal, pulse slow and of poor quality. The liver dulness was much diminished. The belly was rigid but not swollen; most tender at the epigastrium; markedly tender in the right iliac region. The next morning he had rallied decidedly. The tenderness was, on the whole, less, and most marked in the right inguinal region. White count, 43,600.

As soon as I saw and examined him I believed him the subject of general peritonitis from perforation of the appendix, and asked for a surgical consultation with reference to immediate operation. Dr. Warren saw him promptly and concurred in the diagnosis.

Operation.

Dr. Warren: I consider it most proper to state from the point of view of diagnosis that this case came after the one in which I had made the diagnosis of perforating ulcer of the stomach, and yet in this case I concurred with Dr. Shattuck in his diagnosis of appendicitis. The patient was a young man, of the type we see brought in with perforating appendicitis, certainly not of the type we generally associate with gastric ulcer. Then there was the distinct history of pain in the right iliac region, great rigidity all down the right side of the abdomen, so that appendicitis seemed the most probable diagnosis.

The patient was operated upon by twelve o'clock. I think the acute pain which Dr. Shattuck referred to occurred about nine the night before, so it was fifteen hours after the first attack of pain. The incision was made first over the region of the appendix, and a quantity of creamy, thin, rice-water fluid welled up from the bottom of the cavity. The appendix was pulled out and found to be normal. The incision was enlarged upwards, along the linea semilunaris towards the stomach, as flakes of lymph were found in that direction, and the stomach was found with a perforation almost exactly in the same spot that existed in the other case, namely, not far from the pyloric orifice. The perforation was very much smaller, however, and several Lembert sutures were immediately taken to shut it up as soon as possible. No attempt was made to excise the ulcer, the feeling being to stop the leak as quickly as possible, the tissue around the ulcer being in good condition and the sutures holding well. Attention was turned to disinfection of the abdominal cavity. A certain amount of flakes of lymph was found along the region of the abdomen underneath the line of incision. The rice-water fluid was found throughout the abdominal cavity, a large quantity of it welling up from the pelvis. Owing to the general dissemination of this fluid I took particular pains to wash out the abdominal cavity with normal salt solution. To make this possible there was a good large opening in the linea semilunaris. I did not remove the intestines from the abdomen because there was little, if any, gluing together, and they could be separated with one hand while the other hand poured salt solution through a funnel into the abdominal cavity. About six gallons were poured in this way, and then the abdomen was carefully sponged out. A wick was passed down into the pelvis and another up towards the stomach and the wound closed. Nutrient enemata with stimulants were given every four hours after the operation.

On January 13th, the patient was restless and thirsty; had nothing by mouth; was infused with 800 cubic centimetres of warm salt solution, right arm. On the 15th, water by mouth. On the 18th, temperature normal; wicks changed twice a day. On the 21st, milk and lime-water by mouth. On the 25th, liquid diet. On the 29th, soft solids; patient in good condition. On February 8th, sinuses almost closed; no discharge. On the 11th, patient in excellent condition; put upon house diet.

A culture was taken at the time of the opening of the abdomen, and later of some of the fibrinous masses, I think, and then after the washing out. In all cases the cultures were sterile, and I presume it was due to this fact that the patient recovered. There

is a possibility that some of these cultures got dried and therefore did not grow, but I give the facts as they are stated in the report. (The patient then walked into the room and showed his cicatrix.)

In answer to a question by Dr. Harrington, Dr. Warren said that in the first case when the abdomen was opened there was a loud noise, with explosion of gas. In the second case there was not.

Dr. Joslin remarked that this was the first case of gastric ulcer with perforation operated upon in the hospital which had recovered, unless such a case had occurred since January, 1898.

Dr. F. C. Shattuck reported a case of

HEMORRHAGE FROM THE WHOLE GASTRIC MUCOSA SIMULATING GASTRIC ULCER.

A Swedish domestic of twenty-nine entered Ward 30, December 23d, sent in by Dr. Beach. For three years or so she had had distress after meals, more or less severe. Eighteen months ago she vomited blood twice and passed blood downward for several days following. Severe indigestion five or six weeks ago, after unusual fatigue. Two days ago fainted and vomited about four ounces of blood and, apparently, passed blood by stool last night. Nothing important was detected on physical examination. She had good color in her cheeks and lips. Hemoglobin, 75 per cent.

No food was permitted to enter the stomach, but nausea was constant, was not checked by morphia, and December 24th and the following days, she vomited blood in considerable amount. She was running down so rapidly that December 28th operation was advised and accepted. It was feared unless the bleeding vessel could be found and tied she would succumb to loss of blood. There was nothing in the history to suggest the hemorrhagic diathesis and the ear-prick made for the blood examination gave no trouble. No doubt was felt as to the diagnosis of gastric ulcer.

Operation.

Dr. H. H. A. Beach: The patient's abdomen was opened on the day of transfer by an incision of five and one-half inches in the median line, beginning one and one-half inches below the ensiform cartilage. Upon cutting through the skin and subcutaneous tissue the hemorrhage was excessive. It filled the wound immediately, not from a number of vessels that could be tied, but from the whole surface as from a sponge filled with blood, and at once raised the question of hemophilia as a cause. The bleeding was checked by direct compression, and the peritoneal cavity then opened. The stomach was carefully inspected, and its peritoneal surface found of a dark red color from the intense injection of its blood-vessels, but no trace of perforation, softening or thinning was detected. The stomach was opened by a straight incision midway between the greater and lesser curvatures, and sufficiently free to permit a thorough inspection of its interior from the pylorus to the cardiac opening. In examining the border of the stomach wound, I found a softened spot of one-half inch in diameter that bled freely and required a continuous suture for its control. This suture tore out with very slight tension unless the needle was introduced beyond the softened area, and so suggested the beginning of a necrotic process. The stomach was then cleared of clots and a search made for ulcerations. None were found, yet the bleeding continued from what appeared to be a granulating surface, involving the larger part of the stomach. When compressed with a sponge it would cease, only to begin again as soon as the pressure was removed. This pressure was maintained steadily for a considerable period and repeated at intervals. It became clear that the stomach could not be closed without subjecting the patient to the same condition of things that existed prior to the operation. In order to maintain the compression necessary to control the bleeding, I decided to suture the border of the stomach around to the abdominal wall, and to pack the stomach with gauze, letting the ends project from the opening and applying direct compression by gauze compresses and an abdominal band over all. Styptics and cautery offered no advantages over this plan, as there could be no security against a recurrence of hemorrhage. The condition of the patient forbade complete gastrectomy. The most dependent part of the abdominal wound was closed with provisional sutures and a wick of gauze inserted below the line of union with the stomach. Morphia, one-fourth grain, was given subcutaneously soon after the removal to her bed, and rectal feeding, including stimulants, begun. She passed a fair night, having considerable sleep and no recurrence of bleeding.

The gauze packing was completely and easily removed at the end of forty-eight hours. Some retching at the time, which soon subsided; no bleeding. Enemata given regularly and retained. In the evening she was reported for cyanosis and collapse, the pulse became weak and rapid and the extremities cold. An intravenous injection of one quart of hot salt solution was given at once, and another in two hours by my assistant, Dr. La Conte. Marked improvement in her condition followed immediately after and continued. Later, with the change in the force and fulness of her circulation, she had a very slight hemorrhage from her stomach, that was easily arrested by the re-insertion of some gauze; this was removed on the following day. On the third day after the operation the evening temperature was 101^{6}, pulse 126 and of fair quality; feeding by the mouth of small quantities of peptonized milk; good union of stomach to the skin; enemata regularly given and retained. The wicks were removed and provisional sutures tied on the two following days. Although some gastric juice escaped into the dressing, there was little or no irritation of the skin, owing to its protection by the application of stearate of zinc. There was comparatively little change to report after this until the sixth night, when her sleep was much disturbed and the urine diminished to a few ounces. The enemata were well retained. Pulse varied from 120 to 130. A soft-rubber tube was passed through the wound into the stomach and pushed gently beyond the pylorus. Through this seven ounces of milk and salt solution were injected into the duodenum and retained. This was repeated at intervals, with the addition of meat and egg albumin. On the following day all enemata were rejected. Her pulse failed steadily in spite of food, stimulus and strychnia at proper intervals. At midnight another collapse, and from that time she gradually sank and died on the morning of the eighth day, the hemorrhage having been controlled to the end. Small doses of morphia at eight-hour intervals were given to avoid any tug upon the stomach sutures should retching become troublesome. Could her strength have been maintained until the stomach

had regained its normal condition, the gastric fistula might have been closed by detaching the stomach from the abdominal wall and inverting its borders with sutures. Unfortunately, no autopsy could be obtained.

Dr. Warren: I think this condition is a very interesting one, and of course a difficult problem to know how to deal with. I think Küttner, who has written one of the latest monographs on diseases and surgery of the stomach, alluded to treatment of this diffuse hemorrhage, and, if I remember aright, one amongst other suggestions was that of tying one of the gastric arteries supplying the oozing region either at the lesser or greater curvature. I suppose, also, another expedient that might be tried in such cases would be gastro-enterostomy. By diverting the secretions of the stomach into the jejunum, we might relieve the irritation of the mucous membrane, and in that way perhaps bring about a cessation of the oozing. It is certainly a very difficult problem to deal with, as we all know.

Dr. Minot: I should like to ask Dr. Beach if he noticed the liver at the time of the operation. One sees this sort of hemorrhage sometimes in atrophy of the liver. I have had a case this winter in which the vomiting and the bleeding were like that in this case, and where there was an atrophy of the liver, the patient being also a young woman, with none of the usual antecedent history of atrophic cirrhosis, and it occurred to me that might have been the condition here.

Dr. Beach, in answer to this question, replied that he did not see the liver during the operation.

Dr. Harrington: I have just had a patient die from venous oozing from the stomach, a man who clearly had cirrhosis of the liver. The hemorrhage lasted only two days, but while it was going on one could not but wish there was something to be done. The loss of blood was enormous. Three pints of blood at a time were vomited. Although a large, strong man, he died in two or three days.

Dr. Whitney: In cirrhosis of the liver, there are a number of cases quoted of hemorrhage from the esophageal plexus of veins just above the cardiac orifice of the stomach; and blood that is vomited probably comes from the esophagus rather than from the stomach.

Dr. Harrington reported a case of

PUDENDAL HERNIA OF THE BLADDER IN A WOMAN FORTY-SIX YEARS OF AGE.

He showed the patient after the return of the bladder to the pelvis. The bladder had been drawn down by an edematous fibroid tumor arising in fibrous tissue in the floor of the pelvis. The tumor was closely incorporated with anterior wall of the bladder. It hung from the labium of the left side with attachment extending backward to the left buttock. The tumor with the bladder hung between the legs. It was eight inches in length and eighteen inches in circumference at its largest. It caused retention of urine. A soft catheter had to be introduced eight inches into the urethra before the urine would flow. Compression of the tumor caused an acceleration of the flow of urine. The abdomen was opened but the bladder could not be separated from the tumor from that side. The tumor was then cut into from the outside and dissected off from the bladder. The bladder was then returned to its proper position. This left an opening through the floor of the pelvis which admitted four fingers. The tubes and ovaries were removed from the uterus and the body of the uterus was drawn over into the hernial opening and secured by a ligature. This closed the hernial opening. The patient made a rapid recovery. She was able to pass her urine on the second day.

Dr. F. C. Shattuck reported a case of

PYLORIC STENOSIS AND GASTRIC DILATATION FROM GASTRIC ULCER; HOUR-GLASS CONTRACTION OF THE STOMACH.

This patient was seen by Dr. Stone in the Out-Patient Department. Dr. Harrington and I simply confirmed his diagnosis. A waitress, age twenty-eight, entered January, 1899. She stated that as long as she can remember she has been subject to attacks of indigestion characterized by heartburn, sour stomach and distress after eating. About fourteen years ago, after a severe attack, she vomited a pint or more of blood. This has never recurred since. Generally her attacks of indigestion have become more frequent and prolonged. For the past three months she has suffered much, vomiting frequently and sometimes large amounts, and she has lost in this time some thirty pounds in weight.

Examination showed a dilated stomach; capacity 80 + ounces; secreting HCl in sufficient amount. Inflation of the stomach with air gave no hint as to the presence of hour-glass contraction such as was found to exist at the operation, which was advised and accepted.

Operation.

Dr. Conant: This case, previous to undergoing operation, had the stomach carefully blown up, and it is interesting to note that there was then no evidence of an hour-glass contraction. At the time of the operation there was found to be an hour-glass contraction, which only admitted the ring finger. The incision was made in the median line about two and a half inches long. When the peritoneum was cut, the contracted portion of the stomach appeared. At first sight the contraction was so marked that it seemed as if this were the pylorus. Examination with the finger failed to detect any pyloric thickening and further examination revealed that there was an hour-glass contraction, and that the pylorus was practically in its normal place, although somewhat bound down by adhesions. These adhesions made it difficult to get the pylorus out, and it was only after considerable work that the pyloric end of the stomach was drawn up into the wound. External examination showed the pylorus to be very thick and it had under the fingers the feeling of pure gristle. Externally it had all the appearance of a complete closure. It was decided to make an incision through the contraction of the hour glass. The incision was practically the Heinecke-Mikulicz. This was done at the suggestion of Dr. Beach, who had operated upon two cases, and of Dr. Harrington, who also had had two cases. Following their suggestion, an incision about three inches long was made. No cicatricial tissue was found. Through this opening it was possible to feel the pylorus, and on examination one was not able to put the tip of the little finger through the pyloric opening. The incision made through the hour-glass contraction

was sewed up by the Heinecke-Mikulicz method. The most interesting thing about the result in this case was that the hour-glass contraction had been relieved to such an extent that the stomach was very much like the normal stomach except with a slight depression at the point of incision. An incision was then made through the pylorus, which was found to consist of very firm cicatricial tissue. On examining the mesenteric glands, which were numerous, it was feared that they might be malignant. A few of them were removed and examined by Dr. Whitney, who reported that they were simply enlarged glands, and there was nothing malignant in the tissue taken from the pylorus. The whole cicatricial tissue was cut out, and it was found to include nearly three-fourths of the circumference, the posterior portion being free.

After the removal of the cicatricial tissue the wound was sewed up by the Heinecke-Mikulicz operation; then the abdominal wall was sutured and the woman put to bed. Except for a little vomiting that afternoon the patient had no serious trouble. At the end of forty-eight hours she began to have coffee and milk and water. After the third day she began to have food in considerable quantity. I think that it is possible in many cases to begin feeding the patient much earlier than is usually advised in the books. The gauze was left in the wound for five days and then removed, and the wound has been gradually closing up. One interesting thing about this case is that in looking up the literature, as far as known, this is the first case in which the double operation of gastroplasty and pyloroplasty has been done.

Six months after operation the patient was reported to be in excellent health, without any gastric symptoms.

Dr. F. C. Shattuck reported a case of

TYPHOID FEVER; PERFORATION; IMMEDIATE OPERATION.

A rubber-worker of thirty entered January 15, 1899, about the end of the third week of typhoid fever, mild in type. At first he was believed to be suffering from influenza, as the Widal reaction was absent and the white count was 10,000. On January 16th he had hemorrhage from the bowel. On January 19th the Widal reaction was still absent. On January 22d it was present for the first time, with a white count of 3,800. The temperature was at this time nearly normal, the general condition excellent, pulse about 100.

On January 26th at 9 A. M., the temperature was 99°, the pulse 90. At the time of my visit, about ten o'clock, he lay on the side, apparently asleep, so I did not speak to him. About half an hour later, while I was still in the house, he was reported for severe abdominal pain. On going to him he was on his back, evidently in great suffering, with an anxious expression. There was great tenderness in the right iliac region, with a rigid abdominal wall. It was believed that perforation had occurred and Dr. Warren was asked to see him with a view to immediate operation. The outlook seemed remarkably good, so excellent was the general condition, and so little time after the occurrence of perforation had been lost.

Operation.

Dr. Warren: The patient was prepared for operation immediately and an incision was made in the region of the appendix, where the tenderness was found to be very great. On opening the abdominal cavity the intestines were somewhat congested, and after passing one or two loops through the fingers, a loop was found with a very minute perforation. It was immediately isolated with gauze and the perforation sewed by longitudinal Lembert sutures. There were a few flakes of lymph and some serum, but no large quantity. The general condition of the peritoneum seemed to be of good color and appearance. The wound was enlarged a little bit and about four gallons of salt solution were poured into the abdominal cavity. There were three cultures taken at different periods during the operation. In No. 1 there were several colonies of staphylococcus pyogenes aureus; in No. 2, two or three colonies of staphylococcus pyogenes aureus; and in No. 3, taken after the washing, a few streptococci and typhoid bacilli. A small strand of gauze was passed down to the neighborhood of the suture and the wound closed. The perforation was found in the ileum a few inches above the cecum. I was taken ill that night and saw nothing of the case afterwards, so I am unable to report the different conditions that prevailed after the operation, although my notes state that the operation was performed January 26th. The patient ran a high temperature until January 29th, and died at noon. The report of the autopsy states: "Signs of peritonitis around the wound; bowels injected; no flakes or adhesions; sutured perforation tight; several large ulcers in small intestine."

Medical Progress.

PROGRESS IN PUBLIC HYGIENE.

BY SAMUEL W. ABBOTT, M.D., BOSTON.

(Concluded from No. 15, p. 383.)

"Public money is never more advantageously spent than in promoting and preserving the public health, an inestimable asset of the Commonwealth."—Sir Walter Foster, M.P., in an address at the opening of a new isolation hospital at Enfield, Eng., in February, 1900.

WATER SUPPLY AND SEWERAGE.

The Treatment of the Sewage of Towns.[48]

At the annual meeting of the German Society of Public Hygiene, held at Cologne in September, Dr. Dunbar introduced the subject of sewage treatment, with special reference to modern methods, in a series of seven propositions, affirming that the first object was to separate the suspended and floating impurities, to eliminate the dissolved organic matters liable to undergo putrefaction, and to destroy pathogenic germs; that the requirements of hygiene, with respect to the degree of purity needed, vary in accordance with local conditions; that by means of careful irrigation it is possible to attain a high degree of purification without nuisance and in certain cases without loss; that intermittent filtration, accompanied at times by a chemical or mechanical treatment, will ensure upon a relatively small area of land a considerable degree of efficacy; that the so-called biological system of treatment depends mainly upon intermittent filtration and the self-purifying properties of the filter when not in action; that neither mechanical disposition nor the vari-

[48] Vierteljahrsschrift f. öff. Gesundheitspflege, vol. xxxi, p. 136.

ous combined chemical and mechanical methods of sewage treatment are capable of effecting a notable decrease in the amount of dissolved organic matter contained in the sewage water; finally, that the disinfection of town sewage can be carried out more efficiently by the use of calcium chloride than by means of any other known chemical, notably quicklime, and that clarified sewage can be much more readily and safely disinfected than raw sewage water. The author maintained these theses, and in the course of his arguments asserted that in sewage irrigation two chief aims were present, the one to render the sewage water innocuous, and the other to obtain from it those substances yielding food for vegetation.

TENEMENT HOUSE HYGIENE.

Housing of the Working Classes.

At the meeting of the Sanitary Institute Congress at Southampton, in August, 1899,[49] it was stated that there were in Liverpool 70,000 people living in unsanitary houses. They could not turn these people out all at once, since there was no way of rehousing them. The existing laws providing for such cases were expensive, and they obtained a special act. Under this act they dealt with about 500 houses per year and had already demolished 4,200, while 800 had been erected, either by the corporation, or by private enterprise. The new houses were not taken by the people who were displaced, who were, therefore, bettered but little, if at all. They then set about erecting a series of houses which could be let at one shilling or one shilling and sixpence per room. They had erected 180 such tenements, and the poorest of the persons displaced had the first offer. The houses were not all that one would like, but were a great improvement on what the people had previously occupied. Improvements were being made on those first erected.

SCHOOL HYGIENE.

Obstruction of the Light in Consequence of Frosted Windows.

Wolpert[50] presents a series of tables in which are given the results of observations upon the obstruction of daylight in winter, in consequence of the frost upon the window glass.

Notification and School Closure in Relation to the Prevention of the Spread of Measles and Whooping-Cough.

Dr. Armstrong[51] gives the results of notification of 7,680 cases of measles and 3,746 of whooping-cough in Newcastle-upon-Tyne. Each notified case was visited. Printed circulars were left at houses giving instructions as to preventing the spread of infection. Special means were also taken to prevent the spread of these diseases in the schools and especially in infant schools. In December a request was made to the authorities to close all schools (day and Sunday) for four weeks. This was done and many schools were disinfected. In the following year the experiment was tried of closing each school where scholars were being taken sick for a few hours only, long enough to allow of thorough purification and sprinkling the floors of rooms with disinfectants. In the case of measles, this disinfection was followed by extinction of the disease. In one school having 44 cases in three weeks preceding disinfection, after the first fortnight the number fell to a total of three in thirteen weeks. Similar experiences followed in other schools.

In regard to whooping-cough, the difficulty of diagnosis in time for prevention, the prolonged duration of infectivity, and the hopelessness of isolation and disinfection, all render notification unsatisfactory.

BURIAL OF THE DEAD.

Growth of Sentiment in Favor of Cremation in America.[52]

The growth of public sentiment in the United States is illustrated by the following figures, which were furnished to the writer by Mr. Louis Lange, of New York City, President of the Cremation Society of that city. The number of crematories in the United States on March 1, 1900, was 26. The number of bodies incinerated in these establishments was as follows: 1876 to 1883, 25; 1884, 16; 1885, 47; 1886, 114; 1887, 127; 1888, 190; 1889, 249; 1890, 379; 1891, 471; 1892, 561; 1893, 674; 1894, 831; 1895, 1,017; 1896, 1,101; 1897, 1,391; 1898, 1,699; total, 8,885. Further information received later brings the total up to nearly 10,700 at the close of 1899.

Cremation in Scotland.[53]

In order to render cremation more popular, the directors of the Scottish Society have decided to issue certificates, for five or six guineas each, entitling the holder to arrange for a cremation at any time, and they hope that by this means the time may soon come when such certificates may be made available at any other crematorium, not only in Great Britain, but also abroad. By such a policy the ashes of those dying at a distance from home, as, for example, in the colonies, might be brought home and laid to rest in the family burying-place.

Influence of the Soil on Earth Burial.[54]

The suitability of the soil for the site of a cemetery depends on the same conditions that determine its fitness or unfitness for the treatment of sewage, namely, the presence or absence of nitrifying bacteria, its permeability to the air and its humidity and drainage. In the one class of soils bodies undergo desiccation, and the soft parts "return to dust" in the course of a few years; in the other they putrefy and remain for years — in fact, for indefinite periods — festering masses of corruption. The reference gives several instances in support of this statement.

NOXIOUS GASES.

The Latest Advances in Water-Gas Illumination.

Several articles have appeared in the foreign medical journals during the past year relating to the manufacture of water gas, but, with the exception of the British Parliamentary Report of last year, little notice appears to have been taken of the important subject of its extremely poisonous character.

[49] Public Health, October, 1899, p. 29.
[50] Hyg. Rundschau, January 1, 1900, vol. x, No. 1, p. 3.
[51] Report of the Medical Officer of Health, Newcastle-on-Tyne, 1899.
[52] Public Hygiene and State Medicine in the United States, a monograph contributed to the Paris Exposition of 1900, pp. 59 and 60.
[53] The Sanitary Record, February 16, 1900, p. 140.
[54] Public Health, July, 1899, p. 684.

Strachen[55] after devoting a paper mainly to the advantages of water gas, makes the following comment: "It may be also said that the majority of fatalities from the use of ordinary coal gas are due not to its poisonous, but to its explosive, character. In the case of water gas the mixture must have at least 11 per cent. of the gas in order to become explosive."

The comparatively slight importance and rare occurrence of explosions as compared with other accidents may be judged from the recent report of the Gas Commissioners of Massachusetts, from which it appears that in the year 1899 there were 65 fatalities from illuminating-gas poisoning in the State and 69 other non-fatal cases of poisoning from the same cause.

Poisoning by Carbonic-Oxide Gas from a Heating Apparatus.

Voss[56] reports this case, in which a calorifer or hot-air apparatus placed in the cellar of a villa at Quedlinburg, in the Harz, which during an antecedent period of three years had worked perfectly well, caused the deaths of three persons, namely, the proprietor, his wife, and a grown-up son. These persons were all found dead in their beds at nine o'clock on the morning of October 28, 1898. The positions of the heating apparatus in the basement and of the three rooms on one floor above warmed by it are explained. The deaths were undoubtedly due to carbonic-oxide and not to carbonic-acid gas, as in two adjoining rooms, while a lamp on a small low table was still alight in one of them, a canary bird in a cage almost at the same level in the next room was dead, as was also the dog. All the corpses, from their appearance, gave evidence of a painless death. The flue from the calorifer stove was used also for a cooking range in the kitchen, and it is shown that probably owing to some reversal in the draught of this flue the fumes from the apparatus, charged with the gas, escaped by the lower opening connected with the range and entered the rooms occupied by the sleepers. There was a sudden and violent change in the weather, with great warmth after a very cold night, which most likely caused the fatal down-draught in the flue.

A parallel instance occurred in Melrose, Mass., in 1878, in which a young married couple lost their lives in consequence of inhaling carbonic oxide from a hot-air furnace, the cold-air box having been opened too soon, so that the poisonous gas was evolved in large quantity and escaped into the room occupied by these persons.

[55] Journal f. Gasbeleuchtung ü. Wasserversorgung. 1898, 34, p. 541.

[56] Gesundheits-Ingenieur, February 15, 1899, p. 85. See also Investigations as to the products of Combustion of Illuminating Gas, by Dr. Grehaut, Bulletin de la Soc. d'Encouragement pour l'Industrie Nationale, February, 1899, p. 297.

VITAL STATISTICS.

The following table presents in a condensed form the principal vital statistics of the six New England States for the five years 1893–97. The items presented are the numbers of marriages, births and deaths, with the rates per 1,000 of the living population; the deaths under one year and the rate per 1,000 births, and the numbers of deaths from nine causes, with the rates per 10,000 population.

PRINCIPAL VITAL STATISTICS OF THE SIX NEW ENGLAND STATES[57]
(FOR THE FIVE YEARS 1893-97).

Mean Annual Population of the Period (Estimated).	Maine 667,248		New Hampshire 392,256		Vermont 332,463		Massachusetts 2,501,406		Rhode Island 302,569		Connecticut 817,215		Total (New England) 5,103,187	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Marriages and rate per 1,000 population	28,025	8.40	19,794	10.09	13,881	8.35	113,224	9.05	16,776	8.55	32,089	7.85	223,789	8.77
Living births and rate per 1,000 population	71,733	21.50	41,353	21.09	34,876	20.98	348,021	27.83	50,656	25.82	98,097	24.00	644,736	25.27
Deaths and rate per 1,000 population	54,472	16.33	35,308	18.00	27,888	16.77	240,215	19.21	36,749	18.72	72,086	17.64	466,718	18.29
Deaths under one year, and rate per 1,000 births	8,463	117.90	6,052	146.30	4,723	135.40	54,969	158.50	8,447	166.50	14,700	149.80	97,354	151.00
Deaths from Consumption, and rate per 10,000 population	6,056	18.15	3,520	17.95	2,552	15.35	27,443	21.94	3,849	19.61	6,607	16.17	50,027	19.70
Deaths from Pneumonia, and rate per 10,000 population	4,695	14.07	3,164	16.13	2,651	15.95	23,751	18.99	3,430	17.48	6,817	15.95	44,208	17.32
Deaths from Typhoid Fever, and rate per 10,000 population	1,111	3.33	586	2.99	477	2.87	3,508	2.80	593	3.02	1,142	2.79	7,417	2.91
Deaths from Small-pox, and rate per 10,000 population	0	0	0	0	1	0.006	46	0.04	2	1.01	22	0.05	71	0.03
Deaths from Measles, and rate per 10,000 population	138	0.41	88	0.45	104	0.63	786	0.62	254	1.29	436	1.07	1,806	0.71
Deaths from Scarlet Fever, and rate per 10,000 population	205	0.61	228	1.16	200	1.20	2,533	2.03	505	2.57	497	1.22	4,168	1.63
Deaths from Diphtheria and Croup, and rate per 10,000 population	938	2.81	630	3.21	627	3.77	8,082	6.46	1,226	6.25	2,138	5.23	13,641	5.35
Deaths from Cholera Infantum, and rate per 10,000 population	2,546	7.63	1,946	9.92	933	5.61	12,945	10.35	2,569	13.09	3,302	8.08	24,241	9.50
Deaths from Cancer, and rate per 10,000 population	2,368	7.10	1,319	6.73	991	5.96	8,387	6.71	1,133	5.77	2,264	5.54	16,462	6.45

[57] From advance sheets of monograph on Public Hygiene and State Medicine in the United States. Wright & Potter Printing Co., Boston, 1900.

DAMAGES FOR A DISLOCATED KIDNEY.— A man and his wife, according to the *Medical Record*, have obtained a verdict of $10,000 against the Pennsylvania Railroad Company in the New Jersey Supreme Court, for injuries received by the woman while on a train. A jolt occasioned by attaching a new car to the train threw the woman down, and her physician testified at the trial that the accident was the cause of a movable kidney from which she suffered. The court awarded the woman $8,000, and her husband $2,000 for the loss of her companionship.

Reports of Societies.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

A. K. STONE, M.D., SECRETARY.

Regular meeting, Monday, February 5, 1900, Dr. E. H. Bradford in the chair.

ANATOMICAL SPECIMENS.

Dr. J. P. Clark: The specimen which I have to show is a papillomatous growth of the tonsil. It is interesting on account of the rarity of benign growths of the tonsil, the somewhat extraordinary size which the growth reached in this case, and the fact that it was apparently a recurrence of a considerably smaller growth which was removed several years before. The patient was a boy eight years old, whom I saw during my service at the Massachusetts Hospital last spring. There had been a small whitish growth, about the size and general configuration of a blackberry, removed three and a half years before. The present growth began to appear very soon after and increased quite rapidly. It occupied the region of the right tonsil and was removed under ether anesthesia, with the cold wire snare. There was very little hemorrhage and there has been no recurrence as far as I know now. These drawings were made by Dr. Mosher, from sketches made at the time. Dr. J. H. Wright gives the following descriptions of the microscopic appearance: "The central parts are composed of more or less dense connective tissue with vessels, etc. The peripheral lobulated parts are composed of lymphadenoid tissue and of cellular connective tissue covered over with mucous membrane. The growth is difficult to classify, but may be called a papilloma. It is, of course, not malignant."

Dr. R. C. Cabot read a paper entitled

SPLENIC PSEUDOLEUKEMIA; HISTORICAL SKETCH.[1]

Dr. F. C. Shattuck: It seems to me that the reader has not set forth our real ignorance as to "splenic anemia," so called. We are trying to classify way ahead of our knowledge. We characterize one group of symptoms as pernicious anemia, another as leukemia, a third as pseudoleukemia. And this classification, in default of a better, serves a good purpose. But we must not forget that this classification does not rest on bed-rock, inasmuch as we are still profoundly ignorant of the real nature of any member of the group of blood diseases.

Then we encounter cases which do not fit accurately into either of the three divisions, sharing some of the features of two. Among them are the cases of splenic anemia, anemia with enlarged spleen, the splenic form of pseudoleukemia. The second of these terms seems to me perhaps the safest for the present, as we do not really *know* that the splenic tumor and the anemia are intimately related one to the other. Dr. W. H. Smith has kindly gone through my hospital and private records and can find only four cases which could possibly be classified as splenic anemia. One of these, a child of twenty-one months, with a secondary anemia and a spleen reaching to the navel and left iliac crest, I am sure Dr. Cabot would not accept. The reader's remarks and Dr. Smith's investigations confirm my previous impression that splenic anemia is not even a clinical entity. I hope the President will give Dr. Smith an opportunity to state his results.

Dr. W. H. Smith reported

CASES OF SPLENIC ANEMIA IN THE HOSPITAL SERVICE AND PRIVATE PRACTICE OF DR. F. C. SHATTUCK.

In looking over the records of the cases of splenic anemia in Dr. Shattuck's service at the Massachusetts General Hospital, great difficulty was encountered in selecting cases which seemed to meet the requirements. All the cases of Hodgkin's disease, splenic anemia, hypertrophy of the spleen, and many of the cases of anemia were analyzed. From the series three cases were selected. Several others seemed on the border line between Hodgkin's disease, anemia with enlarged spleen, or with glandular enlargement. One patient with history of previous hemorrhages from the mucous membranes, marked secondary anemia with enlargement of the spleen and liver, was excluded, because he had a cardiac lesion, although he was suffering from his anemia at entrance and there were no signs of uncompensated cardiac disease. One other patient with the spleen enlarged, with a secondary anemia and slight glandular enlargement, was not included in the series of cases because of the moderate enlargement of the spleen and the high leucocyte count, 25,000. At one entrance to the hospital, the picture of one case was that of a typical Hodgkin's disease without anemia, without splenic enlargement. A re-entry within a few months showed a severe degree of anemia with the red corpuscles down to 1,000,000, the splenic area enlarged nearly to the umbilicus. Whether to consider this a case of splenic anemia complicating Hodgkin's disease, or a severe case of Hodgkin's disease with an unusual degree of anemia, or splenic enlargement, was the question. Fortunately, after several weeks in the hospital a gland appeared near the nipple which when excised proved to be sarcomatous. A case of moderate secondary anemia with marked enlargement of the spleen without glandular enlargement was left undecided, as the case was that of a young child, where splenic enlargement is not uncommon. A case of severe anemia with 1,720,000 red corpuscles, 9,600 white corpuscles and hemoglobin of 35 per cent., with splenic and hepatic enlargement, with some previous history of hemorrhage from the mucous membranes — nearly all the requisites for a splenic anemia — was through a careful differential count found to be a case of pernicious anemia.

Dr. Hewes: I have seen two cases of a nature similar to that described by Osler as characterizing splenic anemia; one of them, included in the cases of Dr. Shattuck, occurred in the Massachusetts Hospital at the time I was house officer, and Dr. Shattuck's diagnosis at the time was idiopathic enlargement of the liver and spleen. Dr. Shattuck lectured on the case under this diagnosis, and Dr. Fitz two weeks later lectured upon it to the same students as a case of Hodgkin's disease. This was of course simply a difference in terms, not in diagnosis. This case answered as nearly to the description of Osler's typical cases as any I have seen. There was a slight anemia. The count and differential count of leucocytes were normal. The man complained of this mass in the left side. The liver was somewhat enlarged, the spleen larger. No other symptoms; no discoverable etiology.

[1] See page 421 of the Journal.

The second case that I saw was in a boy of fourteen. This case is rather interesting as suggesting that the differentiation between the anemias of infancy and childhood and splenic anemia, so-called, is not very easy to make. This boy, according to the family doctor, had always as a child been very anemic, and all through his childhood had remained with this sallow color, and had never been a well child; had been seen in consultation as an infant by a physician in Boston, who said it was a case of infantile anemia. I saw the boy at the age of fourteen. At this time the blood showed 3,500,000 red corpuscles, hemoglobin 40 per cent., poikilocytosis and achromia of red corpuscles, number of white cells normal and differential count normal, spleen half-way between the navel and Poupart's ligament, the liver somewhat enlarged, one and a half inches below the costal border. If that was the first history I had had of the case I should have said it answered very well to Osler's cases of splenic anemia; but the history of the case suggested that it was simply a condition of infantile anemia where you have enlargement of the liver and spleen which have continued. The boy suffered by spells from diarrhea for weeks at a time. No other symptoms save debility and pallor. No etiology discoverable.

Those are the only two cases I have seen which I should dare to place in that class. I saw one more case a few days after Osler's article came out, which I at first thought a case of splenic anemia, so-called. The patient had been previously well up to two weeks of the time I saw him, then he had a great deal of diarrhea and felt much weaker than he thought he ought to feel, and called a doctor for the first time in his life. The doctor found the spleen resting almost on Poupart's ligament, the liver slightly enlarged, no ascites. The blood was practically normal as far as the whites went; there was a red count of 4,000,000, hemoglobin 70 per cent., pockilocytosis slight. I said, "Here is a case of splenic anemia," finding no other symptom except the anemia and the marked enlargement of the spleen, with slight enlargement of the liver. As the case progressed he developed ascites, and on tapping the fluid was puriform. A culture was sterile, so that it was not a septic peritonitis, but it seemed to me that the puriform condition of the fluid would tend to rule out splenic anemia, pure and simple, and I am more inclined to think of that case as a case of new growth of the spleen. We failed to get an autopsy, however, so that I don't know what the condition was in reality.

These cases of enlarged spleen with anemia do occur as distinct conditions unlike any other known pathological conditions. It is well to bear this condition in mind, even if it is not yet time to name it.

DR. J. L. MORSE read a paper entitled

SPLENIC ANEMIA.[2]

DR. WENTWORTH: I can recall two cases, one a patient nine or ten years old, who was in the Children's Hospital for seven or eight weeks. There was no previous cause for the anemia or for the enlargement of the spleen. He never had had malaria, and there was no evidence of rickets or of syphilis. His spleen reached the iliac crest and almost to the median line of the abdomen. His blood simply showed a secondary anemia — nothing characteristic. These observations extended over six or seven weeks, with normal temperature and normal organs otherwise. We then lost sight of him. I heard that he died about six months later, but did not learn the cause.

The other case was an infant of about eighteen months, who showed no evidence of rickets and no evidence or history of syphilis. The enlarged spleen filled out the whole left flank, and the blood showed secondary anemia. That case we lost sight of.

This variety of anemia has been regarded as one of the primary anemias, and therefore cases with rickets or syphilis or malaria, associated with enlargement of the spleen, cannot be included in this class. There is absolutely nothing characteristic about the blood. As far as Hodgkin's disease is concerned, I thought that it was generally regarded as lymphosarcoma and I was not aware that the splenic changes in so-called splenic anemia were those of lymphosarcoma. The microscopic appearances of the glands in Hodgkin's disease are characteristic. I should think, as Dr. Shattuck says, it is better not to give a name to an unknown condition.

DR. HENRY JACKSON also read a paper entitled

SPLENIC ANEMIA.[3]

DR. VICKERY: I would like to report two cases. One of them I saw in consultation with Dr. H. S. Moran in Roxbury, a man thirty-nine years old, who had grippe about seven years previously, and thought he had never been so well since that time. He had also suffered somewhat from dyspepsia. Otherwise the present illness was the first he had ever had. On July 9, 1899, he woke up nauseated, and vomited about one-half pint of blood, and later a somewhat less amount. On the 15th he also vomited and had tarry stools, and on the 24th, when I saw him, he had vomited what was stated to be about a quart of blood. There was no alcoholic or venereal history. The blood did not seem abnormal on microscopic examination. He was too ill to be examined very much at that time; it was more a question of treatment, and neither Dr. Moran nor myself then discovered any enlarged spleen. On September 13th I had the opportunity of seeing him again with Dr. Moran. The spleen was very large. There was also ascites. There had been no more hemorrhage. There were no enlarged glands, and a differential count of 500 cells made for me by Dr. Tileston was practically normal. The cells were a little pale. They were rather smaller than the normal size, and there was a slight poikilocytosis. One normoblast was seen while counting the 500 white cells. This patient, having had a long and expensive illness away from his family, then went to Baltimore, where his brother lived, and by Dr. Moran's advice saw Dr. Osler, and his case is mentioned by Dr. Osler in the January number of the *American Journal of Medical Sciences*. Dr. Moran has seen the man within a few weeks and thought he was in fair health and able to work.

The second case I first saw in 1898. She was a single woman of seventeen, born in Boston and coming from Whitman, in Massachusetts. The family and previous health had been good. In 1894 she vomited what was stated to be at least two quarts of a mixture of blood and food. The blood was bright red. The doctor who saw her found a large spleen at that time and in 1898; he said that the spleen in 1898 was

[2] See page 422 of the Journal.

[3] See page 423 of the Journal.

not so large as the spleen in 1894. In 1894 she was well except for slight bleeding from the gums at times, and at times attacks of diarrhea. She had always been pale. About the 1st of July, 1898, she had hematemesis again and when I saw her in the hospital she was very pale, rather poorly developed; the spleen large, not tender and its consistence rather hard, its edge blunt, moving with respiration. Inflating the colon did not obscure its mass. There were, however, no notches to be felt upon the spleen. I am quite sure it was the spleen. The heart seemed normal except for anemia. Her white corpuscles were counted many times, the highest count being 1,700. On entrance there were only 700, and the red corpuscles 2,500,000, hemoglobin 20 per cent. A differential count was made and showed nothing peculiar. The urine was frequently examined and found normal. Her weight at that time was 98 pounds. The liver seemed of normal size. On August 11th her blood was 2,456,000 and the hemoglobin 45 per cent. She went away from the hospital feeling much better, and according to an arrangement which I made she came back in the autumn, that she might be examined by Dr. Shattuck and that he might show her to his class if he thought best, and he made the same diagnosis which I had — pseudoleukemia. There were a few not very large glands, I omitted to say, in the neck, more on the left than the right. There were no other glandular enlargements. By the 18th of November she weighed 108 pounds and her hemoglobin had reached 50 per cent., the red corpuscles 4,912,000. The improvement apparently was due to arsenic. On July 5, 1899, she writes that she has improved steadily and that her gums and lips and nails are red, and that she has no more bleeding.

Dr. Cabot: I am struck by the contrast between the cases brought together to-night (with the exception of Dr. Vickery's two cases) and those which Dr. Osler reports. In Dr. Osler's cases hemorrhage is a prominent symptom. Hemorrhage from the stomach was present in Dr. Vickery's cases, but not in the others. It seems to me that we all agree pretty well that the best name that we can attach to this condition is "anemia with splenic enlargement." I certainly feel as Dr. Wentworth does, that we do not know enough to call it a form of pseudoleukemia, first, because we do not know what pseudoleukemia is, and secondly, because we do not know whether the condition we are discussing to-night is identical with what pseudoleukemia *is said to be*. In the same number of the *American Journal of Medical Sciences* in which the report of Dr. Osler's cases appeared, is an autopsy record by Dr. Flexner, of a case which he says he calls Hodgkin's disease, although the cell structure is that of a mixed-cell sarcoma and not the ordinary lymphosarcoma. He decides upon clinical grounds to call the thing Hodgkin's disease because it shows multiple chronic glandular enlargements. I do not mean to say he is right or wrong, but only that we do not know what pseudoleukemia is. There are no distinct boundaries that separate it on the one side from sarcoma and on the other from adenoid hypertrophy, such as occurs in the tonsils. The whole conception is a makeshift.

Dr. Wentworth: I simply stated the laboratory teaching of Dr. Councilman as I understood it. The microscopic examination shows lymphosarcoma. Perhaps Dr. Flexner was wrong.

Dr. Hill, in the absence of Dr. James Marsh Jackson, read a paper entitled

A CASE OF SPLENIC ANEMIA.[4]

Recent Literature.

Twentieth Century Practice. An International Encyclopedia of Modern Medical Science. By leading authorities of Europe and America. Edited by Thomas L. Stedman, M.D., New York. In twenty volumes. Vol. XIX, Malaria and Micro-organisms. New York: William Wood & Co. 1900.

This is an important and valuable volume of this series. With the index it consists of 811 pages. Of these, 522 pages are devoted to the subject of Malaria, and the rest to Micro-organisms. The subject of malaria is of especial interest at the present time in connection with the recent investigations as to the relations of the mosquito to this disease. This article has been prepared by Marchiafava and Bignami, both of Rome. Their names are associated with the subject, and with the modern work which has untangled to great extent the perplexities with which the subject was so long enmeshed. No better choice could have been made by the editor. They naturally belong to and were among the founders of the Italian school, which has advocated and upheld the doctrine of a plurality of parasitic species, in contradistinction to the unitary theory of Laveran.

The completion and publication of this article has been delayed more than a year, that it might meet the rapid and serious modifications which were being made in previous conceptions in regard to several essential points. The later knowledge alone as to the biology of the malarial parasites outside of the human body not only justified but made imperative such delay. This knowledge not only modifies previous views regarding epidemiology, but suggests new and more certain methods of prophylaxis. The article is an authoritative and exhaustive one, at least up to the date of its going to the printers. It is preceded by eleven excellent plates, illustrative of the subject.

Dr. Simon Flexner, of the University of Pennsylvania, and Dr. Eugene L. Opie, of the Johns Hopkins University, contribute the two first-rate articles on Micro-organisms, which complete a very creditable volume.

Prophylaxis and Treatment of Pulmonary Tuberculosis. By S. A. Knopf, M.D. Philadelphia: P. Blakiston's Son & Co. 1899.

The rapid growth of interest in the question of sanatorium treatment for consumptives makes the appearance of Dr. Knopf's book of special interest and use. With the exception of a few unimportant errors concerning the capacity of certain institutions, the work will be of much aid not only to those whose work lies in this special direction but to the ordinary practitioner.

Dr. Knopf devotes a number of chapters to the description of special sanatoria in different parts of the world, the illustrations being throughout of more than ordinary excellence.

These chapters are rather an outgrowth of Dr. Knopf's previous work entitled "Les Sanatoria:

[4] See page 424 of the Journal.

Traitement et Prophylaxie de la Phthisie Pulmonaire," a thesis which procured him the final degree of the Faculty of Medicine of the University of Paris.

The author, while taking advanced views as to the undoubted communicability of phthisis and of the necessity of proper care and cleanliness in dealing with patients, yet decries the inordinate fear which has grown among the laity as to the danger of consumptive hospitals to the surrounding community and cites the views of various authorities to prove the contrary.

The chapters upon prophylaxis, upon the dietetic and hygienic care of consumption, and also those upon hydrotherapeutics have many excellent and practical suggestions. These all testify to the energy and zeal which Dr. Knopf shows in all his recent publications upon tubercular disease and in his efforts to awaken the public to the importance of sanatorium and hospital care of consumptive patients.

In short, no one will regret having the book upon his shelves as an interesting and practical contribution to the subject.

The Causation of Functional Heart Murmurs. By ARTHUR FOXWELL, M.A., M.D. (Cantab.). Birmingham: Cornish Brothers. 1899.

This is the Bradshaw Lecture of 1899. The title is somewhat too comprehensive, as Dr. Foxwell considers only the abnormal sound heard over the second and third spaces, the so-called pulmonary murmur. From clinical experience and numerous experiments, he is convinced that it is caused by the dilatation of the conus and pulmonary artery, with a carrying up of the root of the artery till the valves are vertically over its bifurcation. The changed conditions thus produced are responsible for the murmur. In proof of this he has found that when the murmur was present in a heart during life it could always be produced after death by passing a current of water through the heart by means of a specially constructed apparatus; while in a normal heart it could only be produced after locally dilating the conus and pulmonary artery. His arguments and experiments in support of his theory seem convincing, and his explanation satisfactorily accounts for a condition which has served as the subject of much discussion.

The International Medical Annual and Practitioner's Index. A Work of Reference for Medical Practitioners. Pp. 748. New York and Chicago: E. B. Treat & Co. 1900.

This is the eighteenth year of this annual. It is comprehensive, as usual, and covers in a superficial way the whole field of medical and surgical treatment. The abstracts vary widely in length and quality, as is inevitable in a book of multiple authorship. The volume contains a vast amount of information, much of it no doubt serviceable. It is rather fully illustrated, and again the editors have fallen into the error of attempting to reproduce x-ray pictures on cheap paper, which apparently cannot be done with success. For example, plates I and XV are worthless and should by all means be omitted in later editions. The small cuts on page 301 are miserably reproduced, and the frequent half-tone photomicrographs convey small idea of histological structure. Diagrammatic drawings are certainly to be preferred in such a publication. Many of the illustrations, on the other hand, are sufficiently good for the purpose. The book is cheaply bound.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, APRIL 26, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.

MEDICINE AS A MEANS OF GRACE.

IT has long been recognized that a practical and efficient method of instilling the principles of Christianity into heathen minds is through the medium of their bodies. Hence has grown the importance attaching to the work of the so-called medical missionary, who has for many years been a potent factor in bringing the recalcitrant native to a sense of his possibilities and destiny. We have the advance sheets of a paper by Dr. Albert P. Peck, Dean of the Medical Department, North China College, American Board of Foreign Missions, on the subject of "The Training of Natives in Medicine in Foreign Mission Fields," which was presented at the Ecumenical Missionary Conference in New York. It is the hope of those interested in the matter that a certain number of native student assistants may be trained in medicine sufficiently to be of service to the superior medical officers. Of this project, Dr. Peck says: "That medical missionaries need native help in their arduous labors will be readily granted, and that such help should be as competent as possible needs no argument. Hence, the training of a staff in mission hospitals to be student assistants becomes an important part of the duties of the medical missionary. These assistants, as they become capable, multiply the activities of their preceptor, relieve him in routine work, and in exacting attention to certain details in connection with the central station; and as they become still more competent they are often sent out from the immediate presence of their preceptor to take part in tours evangelistic and clinical, or perhaps to be placed for a time in some outstation, there to be necessarily the representatives of the mission station, and to have personal responsibilities of health or life. With the establishment of training classes, which grow into medical schools, there comes the question, is it worth while to educate a larger number than will be required to keep up the supply of trained help needed by the mission, with the idea that they may, perhaps, pass into independent practice and support themselves in their profession as Christian practitioners among their own people?"

To this latter question Dr. Peck gives no dogmatic answer, realizing that the conditions in different countries are quite dissimilar, but, in general, he thinks that if we recognize and admit the value of the medical profession as a social factor in our own civilization, we shall be ready to see the importance of such an element in the infusion of a new life into the effete civilization of the East.

In Japan, for twenty years past, the native practitioners have gladly availed themselves of the clinical instruction to be gained at the medical missions, even though they had long been practising medicine to the extent of their own somewhat primitive knowledge. Conditions in the northern part of China are very much worse; medicine, in the modern sense of the word, is not practised; every so-called scholar is also a doctor, whose success depends rather upon his shrewdness than his knowledge of medical matters. Thus, Dr. Peck writes, there "is a sorry procession of ignorant quacks past the bedside of every unfortunate who is ill or injured, the speed of their transit proportioned to the gravity of the case. If the patient be wealthy and seriously ill there may be several doctors called in a single day — not in mutual consultation, but as soon as one can be hustled out of the way, another may be brought in, and the unfortunate patient compelled to swallow a series of disgusting compounds, which have as little rational relation to each other as have the unsavory ingredients to the disease. There is no such thing as a medical school, and few, if any, practitioners of medicine who support themselves by their practice alone. One would think that such advantages as a little instruction in modern medicine would give would be an inducement strong enough to bring them to accept the proffered help, if purely from a business point of view, but the power of prejudice and conservatism is seen in the unwillingness to meet these advances."

From this somewhat gloomy picture Dr. Peck looks with hope and confidence to the younger generation. Therefore it seems wise to begin the educational reforms among the young, and that medicine be taught only after a general preliminary training of an adequate sort. The final question then comes as to how this medical education is to be brought about. It is not likely that dissections of the body can be made in China for a long time to come, owing to the fanatical prejudice against the mutilation of the human body. This superstition, we have heard from a physician in China, stands also very much in the way of surgical advance, since death is frequently preferred to the loss of a portion of the body, however useless it may have become from accident or disease. In view of these facts difficulties of a very real sort are at once encountered, and Dr. Peck advises a recognition of the facts at the outset and a modification of the plan of education in accordance. On this point he says: "The average intelligence of such communities as, for instance, we have in China, is not very high. They cannot follow advanced hygienic teaching, nor appreciate the most scientific practice. A plain, practical and empirical education is the best for the somewhat undeveloped state of society, teaching the best uses of the imperfect equipment, the rude surroundings which they must have. My recommendation therefore is rather for what we would now call an old-fashioned education for our medical students. The writer has sometimes been annoyed at the anxiety displayed by the Chinese with whom his lot has been cast to learn some new thing, inquiring what is the latest wonder of science, when the vast world of known and tested facts, the road by which we have to go, is unknown. Superficiality is the weakness of the uncultured races."

What has been accomplished in India through the advent of trained women physicians is well known, and certainly goes far to bear out the theory that the salvation of the body is the first step toward the salvation of the soul. This whole problem is clearly an interesting one, and if our mind is made up that it is desirable to interfere with the decadence of the people of the East, it is highly important that we should go about it in the right way, which, we fear, has not always been done. We are, at least, convinced that the introduction of modern ideas of hygiene and medical procedure will do much toward bringing about the moral and physical improvement which should be at the basis of all missionary endeavor. It is a far safer means of reformation than the introduction of warring creeds; of that there cannot be the smallest doubt.

THE FATALITY OF CERTAIN DISEASES. OF A CERTAIN NUMBER ATTACKED WHAT PERCENTAGE DIES?

In consequence of the enactment of improved laws and regulations, and the better enforcement of laws which had long existed but had hitherto been neglected, the practice of notification of infectious diseases has made it possible to determine the fatality of such diseases with a considerable degree of accuracy. The application of these results gives a greater degree of certainty to the prognosis of disease.

It should be noted, however, that all percentages derived from statistics of this character are probably a little too high, since the registration of deaths as now conducted in the States and cities included in the list is more perfectly enforced than the notification of cases, many mild cases escaping notification, especially those of scarlet fever and measles.

The following extract comprises the substance of the returns to certain inquiries sent out by the United States Commissioners to the Paris Exposition of 1900, and compiled under their direction.[1]

In consequence of inquiries sent out in 1899, information was secured in regard to 619,765 reported cases of smallpox, typhoid fever, scarlet fever, diphtheria and measles, which occurred in the years 1894, 1895, 1896, 1897 and 1898, together with 75,715 registered deaths from these dis-

[1] Public Hygiene and State Medicine in the United States, p. 21.

cases which occurred in the same years. These were reported by the following States and cities:

STATES.[1]

Massachusetts	1894-98	Vermont	1896-97
Michigan	1894-98	Connecticut	1898
Rhode Island	1894-98	Indiana	1898

CITIES.

New York City[2]	1894-98	Reading	1894-98
Chicago	1894-98	Hudson Co., N. J.	1894-98
Philadelphia	1894-98	Cincinnati	1894-97
Pittsburg	1894-98	St. Louis	1894-97
Cleveland	1894-98	Baltimore	1894-97
New Orleans	1894-98	Milwaukee	1894-97
Minneapolis	1894-85	Rochester	1894-97
St. Paul	1894-98	Denver	1894-96
Buffalo	1894-98	San Francisco	1898
Toledo	1894-98		

The results of the returns received from the foregoing States and cities are as follows:

Diseases.	Reported Cases.	Registered Deaths.	Fatality (Per cent.).
Small-pox	9,222	2,385	25.8
Typhoid fever	69,758	13,284	19.0
Diphtheria and croup	195,784	44,411	22.7
Scarlet fever	117,847	8,211	7.2
Measles	217,755	6,424	2.8
Total	619,765	75,715	

These results agree fairly well with those of the English Local Government Board for the eight years 1890-97, which showed a fatality for typhoid fever of 18.05 per cent., for diphtheria of 23 per cent., and for scarlet fever of 4.9 per cent.

In the compilation of these figures it was found necessary to reject the returns of several entire States and cities, in consequence of manifest deficiency in the number of reported cases.

The use of antitoxin for the treatment of diphtheria became general in the early months of 1895, throughout the country. If, therefore, the returns for the year 1894 be treated separately it appears that there were 25,844 reported cases, and 7,654 deaths in that year, the fatality being 29.6 per cent., while the fatality of the remaining years was only 21.6 per cent.

Treating the year 1898 in the same manner, the fatality was only 20.5 per cent., or the ratio of 31,494 cases to 6,471 deaths. In two States and seven cities combined, having a total population of 4,250,000, the fatality from diphtheria in 1894 was 29.7 per cent., and in the same places in 1898 it was only 14.6 per cent., confirming the statement that the diphtheria fatality has been cut in twain since the general introduction of antitoxin treatment. It is also quite noteworthy that in several large cities, situated a thousand miles apart, the diphtheria fatality before 1895 was quite uniformly from 29 to 30 per cent.

LOBAR PNEUMONIA.

A VERY interesting series of statistics regarding 500 cases of lobar pneumonia treated in ten years in the wards of the Mount Sinai Hospital has been prepared for the Hospital Reports by Dr. Alfred Meyer, attending physician to the hospital. The youngest patient was four months old, and died, and the oldest was seventy-seven years, and recovered. The total deaths were 94, a mortality of 18 88 per cent. Omitting 23 cases that died within forty hours after admission, the mortality for the series is only 14.20 per cent. There was a very high mortality under twelve months (67.34 per cent.), an almost uninterrupted fall in the mortality up to thirty years of age, and then a rise for every decade up to seventy years, which latter gave a mortality of 50 per cent. The mortality was nearly three times greater between thirty-one and forty than between twenty-one and thirty, and nearly twice as great between forty-one and fifty as between thirty-one and forty. The mortality in female cases was 23.68 per cent., and in male cases, 16.66 per cent., a proportion agreeing almost exactly with that given by Juergensen in Ziemssen's Encyclopedia. Out of 263 cases there were 63 lyses and 200 crises. Of 200 crises, 79 fell on even days and 121 on odd days. All cases were considered as having defervesced by crisis in which the temperature fell from 103° or over to normal within forty-eight hours. In the 263 cases with complete histories the average duration (from the beginning of the disease to the cessation of fever) was thirteen days. As to site, the figures agree with those of other authors in showing a more frequent involvement of the right lung than of the left. The left lower lobe was the most frequent seat of disease, occurring in 26.62 per cent. of the cases. Pneumonias involving the right lung were more fatal than those involving the left, in the proportion of 13.50 to 8.18. There was not one fatal case of left upper pneumonia, though there were 36 in this site out of 325 cases. This does not support Juergensen's view that the prognosis is better when a lower lobe is involved. Pulmonary edema was both the most frequent and the most fatal complication. It occurred in 5.8 per cent. of the cases. There was pleurisy with effusion in 5 per cent., and pericarditis in 2.2 per cent. The cases occurring in summer appear to have been more benign than those of other seasons, for, though they represent 16.16 per cent. of the morbidity, they give only 8.51 per cent. of the deaths.

SMALL-POX IS A PREVENTABLE DISEASE.

THE recent somewhat eventful trip of the steamship *New England*, which has just returned to Boston, is worthy of mention for several reasons. The circumstances are briefly as follows: The steamer sailed February 1st, from Boston, with an excursion party of 425 persons, whose destination was the Orient. While at Rome small-pox appeared, which probably had broken out a considerable time before the vessel reached the port of Naples, where passengers were landed for the Italian sightseeing. The excursionists were on shore, sightseeing, and the captain of the steamer, seeing the desirability of prompt action, sailed for Liverpool without his passengers, after having disembarked their lug-

[1] The returns of several large cities (Boston, Worcester, Providence, Detroit, Hartford, New Haven and Indianapolis) are included in the statistics of these States.

[2] Including the figures of the consolidated city for 1898.

gage. Several of the members of the party have since died of small-pox, and for a time something approaching a panic prevailed. The excursion naturally has come to an untimely end, to the discomfort and annoyance of all concerned.

It goes without saying that the possibility of disease and even of epidemic disease is a consideration which must always be taken into account when a large number of persons are closely associated for a considerable period of time. This, however, would merely seem to enforce the principle that all possible precautions be taken before embarking on such an excursion. This was clearly neglected in this case, in spite of the fact that small-pox has been unusually prevalent during the past winter in sporadic form. Had general vaccination been enforced before the departure of the steamer from Boston, it is altogether probable that the members of the excursion would now be enjoying the pleasures which they had anticipated, instead of beating a disorderly retreat back to their native country. Small-pox is essentially a preventable disease, a fact which people appear to be slow in recognizing. A few more experiences such as this of the *New England* will doubtless do something to enforce the lesson.

MEDICAL NOTES.

DEATH OF PROFESSOR BIRCH-HIRSCHFELD. — The death of Birch-Hirschfeld, professor of pathology and pathological anatomy at the University of Leipsic, is announced. He was born in May, 1842, and after many years of comparative obscurity, was elected to the chair of pathology at Leipsic in 1885, in place of Cohnheim. He is well known for his text-book on pathology, which has passed through several editions, and for his numerous contributions to pathological subjects.

PLAGUE IN MANILA. — A recent renewed outbreak of plague, resulting in 14 deaths in one week, has been traced to infection from the market. A strict quarantine has been instituted, and the market buildings, which are filthy, will be burned. The total number of deaths from plague has been 119 Chinamen and 66 Filipinos. The disease in other localities has been suppressed.

PLAGUE IN PERSIA — An outbreak of bubonic plague is reported in the Javanrood district, near the Turkish frontier. Upwards of 195 deaths have occurred.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the eight days ending at noon, April 25, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 60, scarlatina 46, measles 99, typhoid fever 7.

MR. A. SHUMAN REAPPOINTED.— Mr. A. Shuman has been reappointed as a Boston City Hospital trustee for five years. Mr. Shuman has already served three terms in this capacity, with much profit to the hospital. There is no salary attached to the position and the temptation to the politically indebted to appoint, or to the impecunious incompetent to be appointed, is correspondingly lessened.

ANNUAL MEETING OF SOUTH MIDDLESEX MEDICAL SOCIETY. — At the recent annual meeting of the South Middlesex Medical Society, Dr. Godfrey Ryder, of Malden, delivered the annual address on the subject, "Surgical Pain." Dr. C. H. Cook was elected President for the coming year.

NEW YORK.

A HOSPITAL PAVILION FOR PRIVATE PATIENTS.— The Board of Managers of Mount Sinai Hospital on April 22d formally accepted a gift of $200,000 from Meyer Guggenheim and his six sons to pay the cost of one of the group of buildings about to be erected on the new site selected for the hospital, Fifth Avenue, facing Central Park at 100th and 101st Streets. The proffered structure is designed as a memorial of the deceased wife and mother of the donors, and the offer of the gift was accepted on the condition that it should be devoted to the use of private contributing patients. Accompanying it was a letter in which the opinion was expressed that such a department could not fail to prove a constant and remunerative source of income, and, as a consequence, the revenues derived therefrom, added to the other resources of the institution, would render practically certain a more successful prosecution on a more extensive scale than hitherto of the charitable work now engaged in. The estimated cost of the entire new hospital is about $2,000,000.

HOSPITAL FOR INCIPIENT TUBERCULOSIS. — Governor Roosevelt has named the five trustees of the New York State Hospital for the Treatment of Incipient Tuberculosis, which is to be established in the Adirondacks. Two of them are physicians, Drs. John H. Pryor, of Buffalo, and Willis G. Macdonald, of Albany. On April 17th, Mayor Van Wyck gave a hearing on the bill passed by the Legislature. Drs. H. M. Biggs, John B. Cosby, John H. Girdner and Daniel Lewis spoke in favor of the measure, and a letter urging the Mayor to approve it was read from Dr. N. H. Henry, who introduced it in the Assembly. Dr. Henry was not able to be present, being on duty with General Roe and the militia at the Cornell Dam.

BEQUESTS TO HOSPITALS. — By the will of James D. Sarven, $5,000 is bequeathed to the Tarrytown Hospital to endow a "Sarven Free Bed," and 200 shares of Northern Pacific Railroad first preferred stock to Harriet L. Burgess, a nurse in that hospital who attended him with great faithfulness when he was under treatment in the institution. By the will of the late John Halstead, of New York, which bequeaths the bulk of his estate, amounting to about $500,000, to the Cooper Union, $2,000 each is left to the Skin and Cancer Hospital and to the Northern Dispensary.

ARBOR DAY AND TREES.— Governor Roosevelt, in a special proclamation calling public attention to Arbor Day, fixed by statute on the 4th of May, states

that the school children of the State have planted more than two hundred thousand trees within the ten years in which Arbor Day has been recognized, and that few similar efforts in recent years have been more thoroughly commendable than the effort to get the people practically to show their appreciation of the beauty and usefulness of trees.

Complimentary Dinner to Dr. A. Jacobi. — It is proposed by a number of the friends and professional associates of Dr. A. Jacobi to tender him a dinner May 5th at Delmonico's, New York, on the occasion of his seventieth birthday, in recognition of the service he has rendered in various relations during the course of his career as a physician, educator and civic worker. Any one who has not received a personal application blank may apply to Dr. A. G. Gerster, Box 3032, New York City.

Prison Attendants. — In an address delivered April 4th, Commissioner John W. Keller, of the Department of Public Charities, said, in speaking of the employment of prison labor in hospitals, asylums and public institutions, that it was only at the beginning of the present year that he had finally succeeded in effecting the complete elimination of prison attendants.

From Brooklyn Bridge with Suicidal Intent. — On April 20th a woman jumped from the Brooklyn bridge with suicidal intent, but was promptly picked out of the water and taken to the Hudson Street Hospital, where she is said to be likely to recover. One other woman jumped from the bridge, in September, 1895, and she, too, was but little injured.

State Hospital for Care of Crippled Children. — The Governor, on April 12th, signed the bill establishing a State Hospital for the care of crippled and deformed children, in or near New York City, and appropriating $15,000 therefor.

A Genito-Urinary Society. — A new medical organization has been formed under the name of the New York Genito-Urinary Society.

ARMY NOTES.

Cemeteries in Porto Rico. — A recent general order issued in the department of Porto Rico, based on the recommendation of the Board of Health, provides that all cemeteries established by public funds shall be civil in character, and that each municipality shall have at least one such civil cemetery. Graves or lots in such cemeteries may be sold, but a sufficient area must be set aside for the free interment and proper burial of the remains of the poor and friendless. In all existing cemeteries it is prescribed that no further interments shall be made unless such interments can be accomplished without disturbing the remains of human beings previously buried. The order also provides for the maintenance of cemeteries in a decent condition and authorizes the Board of Health to close any cemetery by the further use of which the health of the municipality appears to be threatened. Provision is made for the punishment of acts of vandalism or sacrilege in cemeteries. This order appears to have resulted from the persistent continuance of the ecclesiastical customs as regards burial which prevailed during the period of Spanish domination. Cemeteries were entirely in the hands of the clergy, by whom they were regarded as a source of profit. Graves were usually rented for limited periods — about five years — and at the expiration of these periods, unless further payments were made to the church authorities, the occupants of these graves were ruthlessly exhumed and the burial spaces resold. The bones thus disinterred were scattered outside of the cemetery or were heaped together indiscriminately in some obscure corner. Efforts have previously been made to abolish this practice, but apparently without the desired results. The new order will undoubtedly meet with the hostility of the ecclesiastical element.

An "Official" Report. — The following official report on the condition of an old soldier, received at the office of the Surgeon-General, is calculated to make medical men proud of the fact that they, too, belong to the learned profession of medicine. The report is as follows: "I find the present condition of his legs, as follows, to wit: the Right leg commencing at the Top of foot clear up into Asending vena caba the entire venus sistem of leg is in A congested or Vericoste condition. I mean all the superficial and deeper ones are in sutch A state as would bee left from several attacts of fleebeetes as it has some 18 or 20 places where there has been ulcers and most all the surfice below the knee shoe that discolored and Indurated condition, from frequent ulsers that have come and are slow to heal and there is no time that he can dispence with bandaging the limb. Sometimes he is compelled for weeks at a time to take the bed and submit to constant treatment for that subacuit. Fleebeetes that from any slight cause does make its Apperance and likewise the Left Leg is in every resp as bad. and so he is compelled to bandage above the knee and so the same discoleration and old escars from ulceration — and on examing the Trunk the entire Venis sistem over abdoman and including the Glutiel muscles. Now his condition in my judgment of *each leg are equil to or grater* than the loss of A hand or foot." Reference to Polk's Medical Directory discloses the fact that the writer of the above graduated in 1883 from the Bennett College of Eclectic Medicine and Surgery, at Chicago, Ill.

The Hospital Ship "Missouri." — The Secretary of War has received a telegram from General Bates, president of the special board appointed to inspect the hospital ship *Missouri*, now at San Francisco, endorsing the recommendation of Surgeon-General Sternberg that the vessel be discontinued as a hospital ship and turned over to the Quartermaster's Department as a general transport. Before the departure of the board from Washington, Surgeon-General Sternberg notified the Secretary of War that in

view of the considerable time which might be required in putting the *Missouri* into condition he considered it better to transfer the vessel to the Quartermaster's Department, and recommended that the sick and wounded in the Philippines be returned to the United States on board the regular transports. These sail from Manila every two weeks and are abundantly equipped to care for a considerable number of sick and convalescents on the return trips.

EQUIPMENT OF THE MEDICAL DEPARTMENT. — The board of medical officers which has been engaged during the past year in a revision of the supply tables for the Medical Department of the Army has just concluded its session. Many practical changes have been recommended, and many great improvements made in the character of the instruments, appliances, chests and field equipment. The matter of supplies has been exhaustively studied, as a result of which the equipment of the Medical Department will undoubtedly be superior to the equipment of the character provided for foreign armies.

INSPECTION FOR VENEREAL DISEASE. — Weekly inspections for the detection of venereal disease among the United States troops at Matanzas, Cuba, are now being carried out. It will probably be but a short time before this method of preventing concealed venereal disease is generally adopted among troops serving outside the United States.

Miscellany.

BOARDS OF HEALTH.

THE *Boston Medical and Surgical Journal*, which is apparently simple-minded enough to believe that boards of health are instituted for the purpose of caring for the public health, has this to say:

"It should be the duty of boards of health, also, to keep in touch with all the discoveries in sanitary science, to be familiar with every advance in the art of protecting the health of the community and to be able themselves to prepare and devise schemes for minimizing the ravages of disease. With such duties before the boards of health, it is obvious that the members of such boards must be selected with the greatest care as to their character and qualifications. The community has the right to demand that such responsibilities should be entrusted only to competent persons, and that matters so vital as the lives and health of the citizens should be placed above the plane of political preferment — should never be used as counters in the political game."[1]

Of course there is no doubt that if the purpose of a board of health were what the *Medical and Surgical Journal* thinks it is, all that it has to say is admirable for good sense and sound advice. Nevertheless, so far as we have observed, the chief value of a board of health is that it provides three chief "counters," and occasionally half a dozen or so minor ones, for the political game. — *The New Bedford Evening Standard.*

[1] Editorial, April 12th, p. 390.

METEOROLOGICAL RECORD

For the week ending April 14th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer: Daily mean.	Thermometer: Daily mean.	Thermometer: Maximum.	Thermometer: Minimum.	Relative humidity: 8.00 A. M.	Relative humidity: 8.00 P. M.	Relative humidity: Daily mean.	Direction of wind: 8.00 A. M.	Direction of wind: 8.00 P. M.	Velocity of wind: 8.00 A. M.	Velocity of wind: 8.00 P. M.	We'th'r.*: 8.00 A. M.	We'th'r.*: 8.00 P. M.	Rainfall in inches.
S...8	29.65	44	53	34	32	38	35	N.W.	N.W.	15	12	C.	C.	
M...9	29.85	36	43	29	37	64	50	N.W.	N.W.	24	9	C.	C.	
T...10	30.08	36	46	27	48	49	48	N.W.	N.W.	20	18	C.	C.	
W...11	30.30	42	50	33	57	60	58	N.W.	S.	8	9	F.	C.	
T...12	30.14	40	44	36	70	100	85	S.E.	N.E.	6	16	O.	R.	.49
F...13	29.82	42	43	40	96	88	92	N.	N.W.	13	10	R.	O.	.08
S...14	29.92	44	53	35	69	46	58	W.	S.W.	9	12	C.	C.	
☞														

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☞ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, APRIL 14, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from: Infectious diseases.	Acute lung diseases.	Typhoid fever.	Diphtheria and croup.	Measles.
New York	3,654,594	1644	559	20.94	27.30	.42	3.66	1.32
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,366,832	691	204	19.15	16.27	2.61	2.88	3.16
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	269	88	22.20	20.72	.37	4.81	.74
Baltimore	506,389	226	57	27.28	26.84	.44	2.64	.44
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	172	59	29.00	23.20	6.96	2.32	2.32
Pittsburg	305,000	124	31	3.24	29.25	1.62	.81	—
Washington	277,000	—	—	—	—	—	—	—
Milwaukee	275,000	122	26	13.94	51.66	—	2.46	1.64
Providence	150,000	61	18	14.76	29.52	—	—	—
Nashville	87,754	36	9	—	—	—	—	—
Charleston	65,165	61	21	14.76	22.96	—	—	1.64
Worcester	111,732	45	14	24.44	24.44	2.22	—	—
Fall River	103,142	23	7	13.05	13.05	—	—	—
Cambridge	92,920	54	14	7.40	29.60	—	3.70	—
Lowell	90,114	28	8	6.74	32.13	—	—	—
New Bedford	70,511	27	7	7.40	18.50	—	3.70	—
Lynn	68,218	22	11	8.30	41.50	—	—	—
Somerville	64,204	30	11	6.66	23.33	—	—	—
Lawrence	59,072	34	5	14.70	26.46	—	—	—
Springfield	58,266	—	—	—	—	—	—	—
Holyoke	44,510	13	2	15.38	53.83	—	—	—
Brockton	38,759	13	6	15.38	7.69	—	—	—
Salem	37,723	6	2	—	16.66	—	—	—
Malden	36,421	20	4	15.00	—	—	10.00	—
Chelsea	34,235	18	4	—	22.22	—	—	—
Haverhill	32,651	10	4	30.00	—	—	—	—
Gloucester	31,426	9	—	33.33	11.11	—	—	—
Fitchburg	30,523	9	2	11.11	22.22	—	—	—
Newton	30,461	10	1	10.00	40.00	—	—	—
Taunton	28,527	7	3	14.28	14.28	—	14.28	—
Everett	28,102	6	2	33.33	16.66	—	16.66	—
Quincy	24,578	—	—	—	—	—	—	—
Pittsfield	23,421	6	3	50.00	—	—	33.33	—
Waltham	22,791	9	3	—	33.33	—	—	—
North Adams	21,583	4	1	—	50.00	—	—	—
Chicopee	18,316	—	—	—	—	—	—	—
Medford	17,190	8	1	12.50	12.50	—	—	—
Newburyport	15,936	—	—	—	—	—	—	—
Melrose	14,721	—	—	—	—	—	—	—

Deaths reported 3,839; under five years of age 1,494; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 762, acute lung diseases 948, consumption 401, diphtheria and croup 116, measles 55, typhoid fever 39, scarlet fever 39, diarrheal diseases 38, whooping-cough 35, erysipelas 23, cerebrospinal meningitis 16.

From scarlet fever New York 22, Philadelphia 8, Boston 6, Pittsburg 2, Worcester 1. From diarrheal diseases New York 18, Pittsburg 6, Boston 4, Philadelphia and Fall River 3 each, Baltimore, Providence, Worcester and New Bedford 1 each.

From whooping-cough New York 17, Philadelphia 7, Boston 4, Providence 2, Baltimore, Pittsburg, Washington, Worcester and Springfield 1 each. From erysipelas New York 14, Philadelphia 4, Boston 2, Baltimore, Providence and Cambridge 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending April 7th, the death-rate was 23.0. Deaths reported 5,120: acute diseases of the respiratory organs (London) 499, measles 177, whooping-cough 146, diphtheria 78, fever 39, scarlet fever 30, diarrhea 28.

The death-rates ranged from 15.0 in Derby to 33.2 in Wolverhampton: Birmingham 22.8, Bradford 21.6, Cardiff 21.5, Gateshead 17.2, Hull 24.2, Leeds 23.7, Liverpool 31.6, Manchester 31.0, Newcastle-on-Tyne 20.0, Nottingham 21.9, Sheffield 21.8, Sunderland 17.3.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING APRIL 21, 1900.

G. E. H. HARMON, medical inspector, detached from the "Baltimore" and ordered to the "Oregon."

F. B STEPHENSON, surgeon, detached from the "Oregon" and ordered to the "Baltimore."

(CHANGES BY CABLE FROM ASIATIC STATION.)

L. MORRIS, passed assistant surgeon, to the "Baltimore."

S. G. EVANS, passed assistant surgeon, order of April 13th modified; ordered to proceed home, when detached from the "Marblehead," and to be ready for sea duty.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE FOURTEEN DAYS ENDING APRIL 19, 1900.

WHITE, J. H., surgeon. Detailed as inspector of quarantine stations. April 10, 1900.

COBB, J. O., passed assistant surgeon. Detailed as delegate to attend the meeting of the American Climatological Association at Washington, D. C., May 1-3, 1900. April 11, 1900.

DECKER, C. E., assistant surgeon. Bureau letter of March 31, 1900, granting Assistant Surgeon Decker leave of absence for twenty-nine days on account of sickness, amended so that the said leave shall be for twenty-three days only. April 6, 1900.

MCMULLEN, JOHN, assistant surgeon. To proceed to the South Atlantic Quarantine Station (*en route* to Tortugas) and report to the medical officer in command for temporary duty. April 11, 1900.

CURRIE, D. H., assistant surgeon. Granted leave of absence for ten days from May 4, 1900. April 12, 1900.

MCLAUGHLIN, A. J., assistant surgeon. To report to medical officer in command of the Service at New York, N. Y., for duty and assignment to quarters. April 6, 1900.

LONG, J. D., assistant surgeon. To report to medical officer in command of the Service at Boston, Mass., for duty and assignment to quarters. April 12, 1900.

GLOVER, M. W., assistant surgeon. To report to the medical officer in command of the Service at Baltimore, Md., for duty and assignment to quarters. April 12, 1900.

EARLE, B. H., assistant surgeon. To report to the medical officer in command of the Service at Chicago, Ill., for duty and assignment to quarters. April 12, 1900.

LLOYD, B. J., assistant surgeon. To report to the medical officer in command of the Service at Mobile, Ala., for duty and assignment to quarters. April 12, 1900.

HUNTER, S. B., acting assistant surgeon. Granted leave of absence for two days. April 6, 1900.

HANRATH, F. R., hospital steward. Upon being relieved from duty at St. Louis, to proceed to New York, N. Y., and report to the medical officer in command for duty and assignment to quarters. April 11, 1900.

RICHARDSON, S. W., hospital steward. Relieved from duty at Cleveland, O., and directed to proceed to St. Louis, Mo., and report to the medical officer in command for duty and assignment to quarters. April 11, 1900.

GLENNAN, A. H., surgeon. To rejoin station at New Orleans, La. April 18, 1900.

MCINTOSH, W. P., surgeon. Detailed to represent the Service at the meeting of the Medical Association of the State of Alabama, to be held at Montgomery, Ala., April 17th-21st. April 13, 1900. To proceed to Tarpoon Springs, Fla., for special temporary duty. April 14, 1900.

GUITERAS, G. M., passed assistant surgeon. Bureau order of March 5, 1900, relieving Passed Assistant Surgeon Guiteras from duty at Matanzas, Cuba, revoked. April 17, 1900.

HEISER, V. G., assistant surgeon. Detailed as delegate to the Congress for the Struggle against Tuberculosis, to be held at Naples, Italy, April 23 to 28, 1900. April 14, 1900.

TROTTER, M. E., assistant surgeon. Bureau order of March 5, 1900, detailing Assistant Surgeon Trotter for duty as quarantine officer at Matanzas, Cuba, revoked and directed to proceed to Cienfuegos, Cuba, as quarantine officer. April 17, 1900.

BALLARD, J. C., acting assistant surgeon. Granted leave of absence for fifty-one days from May 1, 1900. April 16, 1900.

HAVELBURG, W., acting assistant surgeon. Granted leave of absence for thirty days from May 10, 1900. April 18, 1900.

ALLEN, G. C., hospital steward. Granted leave of absence for twenty-seven days from April 19, 1900. April 16, 1900.

ILTIS, G. W., hospital steward. To proceed to Cleveland, O., and report to medical officer in command for duty and assignment to quarters. April 17, 1900.

BOARD CONVENED.

Board convened to meet at Washington, D. C., April 19, 1900, for the physical examination of candidates for appointment as second assistant engineer in the U. S. Revenue Cutter Service. Detail for the Board: Surgeon P. M. CARRINGTON, Chairman; Assistant Surgeon L. D. FRICKS and Assistant Surgeon W. C. BILLINGS, Recorder.

APPOINTMENTS.

JOHN D. LONG, of Pennsylvania; MERVIN W. GLOVER, of the District of Columbia; BAYLIS H. EARLE, of South Carolina, and BOLIVAR J. LLOYD, of Texas, commissioned as assistant surgeons, April 9, 1900.

GEORGE W. ILTIS, of Minnesota. Appointed junior hospital steward. April 16, 1900.

TREASURY DEPARTMENT.

WASHINGTON, D. C., April 12, 1900.

A board of officers will be convened at the Service Building, 378 Washington Street, New York City, Wednesday, May 23, 1900, for the purpose of examining candidates for admission to the grade of assistant surgeon in the U. S. Marine-Hospital Service.

Candidates must be between twenty-one and thirty years of age, graduates of a reputable medical college and must furnish testimonials from responsible persons as to character.

SUPERVISING SURGEON-GENERAL,
U. S. Marine Hospital Service.

APPOINTMENTS.

There have been the following changes in the staff of the Carney Hospital: DR. FARRAR COBB has resigned from position of surgeon to out-patients; DRS. E. A. PEASE, G. W. W. BREWSTER, D. F. JONES, W. F. GAY have been appointed assistant surgeons; DRS. J. S. STONE, R. B. GREENOUGH, J. C. HUBBARD, M. F. BURKE have been appointed surgeons to out-patients.

SOCIETY NOTICE.

AMERICAN NEUROLOGICAL ASSOCIATION. — The twenty-sixth annual meeting will be held at "The Normandie," Washington, D. C., on Tuesday, Wednesday and Thursday, May 1, 2 and 3, 1900.

RECENT DEATHS.

JOHN JOSEPH CRANE, M.D., of New York, died on April 18th, in the Adirondacks, from pulmonary tuberculosis, from which he had been suffering two years. He was born in Elizabeth, N. J., in 1851, and was graduated from Princeton in 1873, and from the College of Physicians and Surgeons, New York, in 1876.

ISAAC C. HARING, M.D., of West Nyack, N. Y., died at the Nyack Hospital on April 15th. He was a graduate of the Albany Medical College and had practised for fifty years in Rockland County.

T. B. HASSIE, M.D., of Gouverneur, N. Y., died April 15th, at the age of forty-one.

The REV. S. O. GARRISON, principal and founder of the New Jersey Training School for Feeble-Minded Children, and founder and secretary of the State Village for Epileptics at Skillman, died on April 16th.

BOOKS AND PAMPHLETS RECEIVED.

Massachusetts Infant Asylum, Thirty-third Annual Report, 1900.

Variation of Type in Diphtheria and Scarlet Fever. By Henry D. Fulton, M.D., Pittsburg, Pa. Reprint. 1900.

Foreign Bodies in the Maxillary Sinuses, with Report of a Case. By R. J. Wenner, M.D., Cleveland. Reprint. 1900.

The Justo-Major Pelvis as a Factor in the Causation of Perineal Injuries. By Joseph Brown Cooke, M.D., New York. Reprint. 1900.

Some Points in the Diagnosis of Traumatic Injuries of the Central Nervous System. By J. T. Eskridge, M.D., Denver, Col. Reprint. 1900.

Addresses.

THE MEDICAL SCHOOL OF THE FUTURE.[1]

BY H. P. BOWDITCH, M.D., LL.D. (EDIN.), D.Sc. (CAMB.),
President of the Fifth Congress of American Physicians and Surgeons.

AMONG the intellectual movements that have characterized the century now drawing to a close, there is perhaps no one more deserving of careful study than that which is concerned with providing education for the people in the school, the academy and the university. The importance of popular education became apparent in proportion as political freedom was secured for the people. Thus Viscount Sherbrooke, better known as the Hon. Robert Lowe, in the reform debates of 1866 and 1867, after the passage of a bill for the extension of the suffrage, uttered the well-known words: "We must now at least educate our masters." The same sentiment has also more recently been embodied in the inscription on the Boston Public Library, "The Commonwealth requires the education of the people as the safeguard of order and liberty," and in the Presidential Address of Dr. J. M. Bodine [2] at the meeting of the Association of American Colleges in 1897, we find the same idea thus expressed: "In America the citizen is king. The king must be educated to wield aright his ballot sceptre."

For many years educators looked upon their work with no little complacency. The educational systems of the various civilized countries were supposed to be well adapted to the ends in view, and educational exhibits have generally been regarded as important features of international expositions. But within the memory of most of those now before me, signs of serious discontent have not been wanting. Education has not always been found to furnish the required safeguards for order and liberty. Highly educated men have often been found singularly lacking in mental balance. Schools for the inculcation of "common sense" have never yet been established. Even the great development of psychology as an experimental science, which has occurred chiefly within the last twenty-five years, though it has served to establish many laws of mental action, has thus far failed to justify the hope that pedagogy may find in psychology a foundation for the erection of rational systems of education. Indeed, we have recently been told by one of the ablest expounders of this science that it is a great mistake for teachers to "think that psychology, being the science of the mind's laws, is something from which they can deduce definite programmes and schemes and methods for immediate school-room use. Psychology is a science and teaching is an art. A science only lays down lines within which the rules of the art must fall, laws which the follower of the art must not transgress: but what particular thing he shall positively do within those lines is left exclusively to his own genius." [3]

Even this general guidance has been very imperfectly afforded, for the limits set by the science of psychology to the art of teaching have never been precisely defined. In fact, the most fundamental question of all, namely, the relation of mental to physical development, has not yet been settled, though much material for its study has been collected. It is not, therefore, surprising that in many countries teachers have made too great demands upon the time and strength of growing children.

This has been clearly the case in some parts of Germany, where school boys from eight to fifteen years of age have found their vital energy so far exhausted by the school work required of them that they have lost all inclination for vigorous athletic amusements so naturally indulged in by Anglo-Saxon boys. The deterioration of the race as a result of too close application to intellectual pursuits, to the neglect of the physique, has been fortunately obviated, in the case of Germany, by the army system, which takes entire possession of the youth before it is too late, and, by requiring him to devote three years to the education of his body, turns him out, at the end of that period, a young man with mind and body trained to a high degree of efficiency, well fitted for civil as well as military pursuits, and comparing favorably in all respects with men of his age in other nations. Looked at from this point of view, the German army must be regarded as an important part of the educational system of the country, though as a piece of educational machinery its workings cannot be considered economical. In fact, the absurdity of depending upon the army to remedy the defects of the school system has long since been forced upon the attention of German educators, and the difficulties above alluded to are now in a fair way to be removed.

In our own country difficulties of a quite different kind have been met with. Here the great danger which threatens our system of popular education arises from its close association with party politics. The office of a school committeeman in one of our large cities has been well described as "the smallest coin in which politicians pay their debts," and as long as the education of our children continues to be entrusted largely to men who consider their position on a school board as the lowest step of the political ladder, there is small hope of the adoption of rational methods of education. Moreover, this intimate alliance between education and politics greatly aids the efforts of persons, more zealous than discreet, to direct the instruction of children in accordance with their own special views. Thus nearly all the States of the Union have upon their statute books laws requiring the physiological action of alcohol to be taught to children in all grades of the public schools. These laws violate the first principles of pedagogy, inasmuch as the physiological action of a drug cannot possibly be understood without a familiarity with anatomy, physiology and chemistry which school children cannot be supposed to possess. They have been passed at the bidding of total abstinence associations, sometimes in opposition to the earnest protests of the teachers entrusted with their execution. How these excrescences upon our educational system may be best removed, and the work of instruction placed under the control of those best qualified to direct it, are questions demanding serious consideration.

I have mentioned these instances in which great educational systems have been found wanting merely for the sake of pointing out that the critics of our methods of medical education, who, as Professor Exner [4]

[1] President's Address delivered before the Fifth Congress of American Physicians and Surgeons, Washington, May 2, 1900.
[2] American Practitioner and News, June 26, 1897.
[3] W. James: Talks to Teachers, p. 7.
[4] Wiener klinische Wochenschrift, No. 3, 1900.

has shown, are now raising their voices in every land, do but give a special expression to a wide-spread feeling that our educational systems are not accomplishing all the objects for which they have been devised, and that the discontent which they imply is but a healthy dissatisfaction with the results thus far accomplished. May the time be far distant when those in charge of our educational interests shall rest content with what they have achieved, for this will indicate that a state of stagnation has been reached similar to that which characterizes the institutions of the Celestial Empire, and that no further attempt is to be made to adapt our methods of instruction to the constantly widening domain of human knowledge and experience.

It may perhaps be well for me at this point to offer a few words in explanation of the selection of such a well-worn theme as medical education as the subject of my remarks this evening. It is true that in recent years the subject has been a favorite one with those who have been called upon to address medical associations or classes of graduating students, and if, in spite of this fact, I venture to add another address to the fast growing literature of the subject, my justification may be found in the following reasons. In the first place, it must be borne in mind that such addresses are very quickly forgotten. "Were it not so," as Dr. Billings has remarked, "it would be a hard world for address-givers." In the second place, the progress of medicine at the present time is so rapid that new points of view are constantly being secured, and it is, therefore, not at all impossible that, even at comparatively short intervals, new and valuable suggestions may be made, both with regard to subjects to be taught and to methods to be employed in giving the instruction.

Lastly, it so happens that during the academic year now nearly completed the Faculty of the Harvard Medical School has inaugurated an entirely new plan of instruction in the sciences of anatomy, physiology and pathology. This scheme, though still in the experimental stage, embodies ideas of such fundamental importance in medical education that its presentation to a representative body of the medical profession seems to me to be peculiarly appropriate.

I shall therefore ask you to consider with me this evening what lessons the faculty of a modern medical school may draw from recent advances in medical science and recent experience in medical education, or, in other words, on what lines the instruction of a medical school of the first rank is likely, in the immediate future, to be organized. I say in the *immediate* future, for what changes are in store for us in the course of the next few decades it is equally impossible to foresee and useless to speculate.

RELATION OF MEDICAL SCHOOLS TO UNIVERSITIES.

One of the most hopeful signs of the times in the field of medical education is the growing tendency of the better schools to ally themselves to universities and of universities to establish medical departments. Of the great advantages to medical education which may be expected from this union it is unnecessary for me to speak, for they formed the subject of a thoughtful discourse delivered by the last president of this Congress at Yale University in 1888.[5] The twelve years that have elapsed since he spoke have brought accumulating evidence of the soundness of his views. In fact, it is difficult to see how a private medical school of the joint stock company type can ever, in the future, rise to the first rank, for such a school is not much more likely to attract endowments than a cotton mill and without endowments the enormous expenses of a modern first-class medical school cannot possibly be met.

Great as are the benefits to a medical school of thus forming a department of a great university, the advantages of the union are not wholly on one side. Beside the increase of prestige secured to the university by the broadening of its functions, the establishment of a medical school as part of the university organization greatly facilitates the instruction of those students who, without any intention of becoming physicians, seek in the study of the medical sciences a means of general culture and mental discipline.

The relations between the governing body of a university and its medical faculty in matters of administration are often defined by custom and tradition rather than by statutory provisions, and vary considerably in different institutions. In general, two methods of government may be distinguished. Either the initiative is left with the teaching faculty, the governing body exercising simply a veto power, or the governing body acts directly without necessarily asking advice from the faculty or its members. The former method of government is most likely to be found in those cases in which a well-established medical school has allied itself to a university for the sake of the mutual benefits that may ensue from the union, and the latter method in those cases in which a university has completed its organization by the creation of a medical department. Both methods have certain advantages and neither is without its drawbacks. In all cases men are more important than methods. On the one hand, the collective judgment of a teaching faculty on matters relating to medical education is likely to be of more value than that of a governing body which may not, and generally does not, include physicians among its members. On the other hand, personal and selfish considerations are perhaps more apt to sway the judgment of a faculty than that of a body of trustees, especially when the question is that of the appointment of teachers. That this is not a serious danger, however, the experience of Germany seems clearly to show, for in that country, as Dr. Farlow has recently pointed out, the faculty "has more power in regard to appointments and the general policy of the university"[6] than with us, and yet we find there the custom of calling professors from one university to another fully established — a custom which must be regarded as one of the strongest influences in maintaining a high standard of educational efficiency. On the whole, therefore, even with this possibility of error, the judgment of a faculty would seem to be the safer guide, and there are probably few boards of trustees who would feel themselves justified in disregarding it altogether.

The above-mentioned advantages of a union between a medical school and a university will naturally become more obvious as the problems of medical education become more complex and the methods of instruction more costly. Hence we may expect in the near future to find all of the better class of medical schools

[5] New Englander and Yale Review, September, 1888.

[6] Presidential Address, American Society of Naturalists, December, 1899. Science, January 5, 1900.

under the egis of a university and we may reasonably hope that this change will be associated with a diminution of the total number of medical schools now so greatly in excess of the needs of the country.

The union of a medical school with a university at once compels the consideration of the proper relation between the academic department and the professional school. To say that the former should be the feeder of the latter and that the holding of an A. B. degree should be the condition of admission to professional studies is to adopt the position taken by two of our leading medical schools.

The A. B. degree, however, since the introduction of the elective system, no longer stands for a definite amount and kind of training. Hence the Johns Hopkins Medical School demands not only the diploma, but also evidence of ability to read French and German and of laboratory training in physics, chemistry and biology. The Harvard Medical School is content to accept the A. B. diploma as evidence of fitness to pursue professional studies, stipulating only that the holder shall possess an adequate knowledge of inorganic chemistry. Whether the example set by these schools will be generally followed is quite doubtful. Without undervaluing the importance of collegiate training as a preparation for a professional career, it may perhaps be contended that a properly conducted admission examination is a better test of fitness to pursue the study of medicine than the possession of a diploma the value of which varies so much with the character of the college bestowing it. Moreover the possibility that a young man unable to afford the expense of a college course may yet by private study prepare himself for a professional career is not to be lost sight of. Hence the Harvard school provides for the admission by special vote of the faculty of young men, not holders of an A. B. degree, who may furnish satisfactory evidence that they have obtained an equivalent education and that they are consequently able to profit by the instruction which the school has to offer.

The recent lengthening of the course of study from three years to four in all the best medical schools of the country has drawn renewed attention to the importance of enabling the student who takes the A. B. degree as a preparation for medicine to so far shorten the sum total of the time devoted to his education that he may be able to enter upon the work of his profession at an age not in excess of that at which his European confrères begin their career as practitioners. A few years ago an examination of the best accessible evidence on the subject led to the conclusion that foreign systems of university education enabled students of medicine to enter upon their life work at least two years earlier than was possible for the alumni of Harvard College, a condition dependent upon the fact that the changes in the academic department which had raised the age of graduation had been made with little regard to the interests of the professional schools and chiefly for the purpose of making the undergraduate department as complete as possible in itself. In other universities a similar condition existed, though probably not in the same degree, as in Harvard.

That the American medical student, seeking the best possible preparation for his profession, is seriously handicapped by these conditions has been generally recognized and the question of the best method of meeting the difficulty has been widely discussed. The most thorough treatment of the case consists in reducing the academic course to three years. Less radical methods are the provision in the academic department of courses of instruction by which students may anticipate a part of their professional work and the permission to count the first year of a professional course as the fourth year for the bachelor's degree. The first and most radical method meets with strenuous opposition owing to the deeply rooted traditions which surround the four years' academic course in this country, while the other plans violate what in some colleges seems to be regarded as an educational axiom, that one course of study should not count toward two degrees. It is interesting to notice that, without any specific legislation to this end, the quiet working of the elective system has in Harvard College practically solved the problem by bringing about a condition in which, as President Eliot says,[7] "Any young man of fair abilities can now procure the degree in three years without hurry or overwork, if he wishes to do so or his parents wish to have him." The President further ventures to predict that "within a time comparatively short the majority of those who enter the freshman class will come to college with the purpose of completing the requirement for the degree in three years." As soon as a three years' residence becomes the rule rather than the exception, a young man spending four years in college will of course be regarded either as deficient in mental capacity or as having wasted his time.

That a reduction of the academic course to three years is an advantage to students looking forward to a professional career or to further study in a graduate school is too obvious to need discussion, but it is interesting to find the change advocated in the interest of the undergraduates themselves. Prof. Clement L. Smith, for nine years Dean of Harvard College, points out[8] that there is a large and influential class of college men who get into the habit of frittering away their time simply because they have so much of it and that "for them and for those whom they influence — and these make up the largest part of the class we are now considering, the men who go from college into active life — the reduction of the course would be a distinct gain." Nor need we fear (as has sometimes been urged) that, in thus reducing the length of the college course, we shall lose the fourth and most valuable year, for, as Professor Smith says, "The senior year is the best year not because it is the fourth but because it is the last year. The causes which make it what it is come from before, not from behind; from the consciousness of opportunity passing away and of the serious problems of life close at hand. The period of waste lies between the fresh zeal and good resolutions with which the youth begins his course and the growing sense of responsibility with which he draws near its close. It is this intermediate period that would be shortened in the briefer course. It is not the senior year that would be cut off; it is rather, let us say, the sophomore year, and with it might well go its absurd name." It thus appears that the claims of the college and of the professional school upon the time of the student are in a fair way to be harmoniously adjusted.

[7] Annual Reports of the President and Treasurer of Harvard College, 1898–99, p. 10.

[8] The American College in the Twentieth Century. Clement L. Smith: Atlantic Monthly, February, 1900.

ELECTIVE SYSTEM.

Let us now consider in what way the medical school of the immediate future is likely to differ from that of the present time with regard to the subject matter of instruction. The most striking phenomenon presenting itself to the educator of to-day is the recent enormous widening of the educational horizon. "The immense deepening and widening of human knowledge in the nineteenth century and the increasing sense of the sanctity of the individual's gifts and will power" [9] are the fundamental facts which underlie the development of the elective system, but it is important to bear in mind that, as Professor Smith observes,[10] this development has been "due not so much to increase of knowledge — for not all new knowledge is straightway fit for educational purposes — but rather to the conversion of new fields of knowledge to the uses of education."

A discussion of the elective system of education with its attendant advantages and dangers would require far more time than I have at my disposal, and I must content myself with pointing out the possibility that, in this period of transition, the educational pendulum may have swung to an extreme position and that too much attention has been given to the accidental differences of pupils, while the essential similarity of their natures has been lost sight of. In discussions on individuality as a basis for the elective system one sometimes hears the statement (attributed to Leibnitz) that no two leaves of the same tree are alike. This dissimilarity, however, does not prevent them from all elaborating the same sap and it is, moreover, always associated with sufficient essential similarity to enable any one, with even the most elementary knowledge of trees, to distinguish the leaves of an oak from those of a maple.

While admitting that some of the extreme positions now maintained by the advocates of the elective system may in the future have to be abandoned, no one can doubt the wisdom of adapting the education to the powers of the mind to be educated and of allowing, in the case of advanced students, the choice of the individual to be a determining factor in the selection of studies. Let us, therefore, inquire to what extent the elective system may properly find a place in the curriculum of our medical schools. That it forms an essential feature of our post-graduate schools of medicine scarcely needs to be mentioned, for these schools have been organized for the express purpose of enabling graduates in medicine to select such subjects for study as may seem to them desirable and to acquire more advanced knowledge than was possible in the undergraduate course. Moreover, in some of our larger schools, since the establishment of the compulsory four years' course, a portion of the instruction of the fourth year has been given in elective courses in various specialties. The elective system in medicine is, therefore, not altogether a novelty, and the question now before us is whether it may be profitably extended to the earlier years of the course.

In his remarks at the dinner of the Harvard Medical Alumni Association in 1895, President Eliot used the following language: "There ought to be in the Harvard Medical School an extended instruction far beyond the limits of any one student's capacity. This involves, of course, some optional or elective system within the school itself, whereby the individual student should take what is, for him, the best four years' worth, the faculty supplying teaching which it might take a single student eight, twelve or twenty years to pursue."[11]

One year ago last December, in an address which I had the honor to deliver in New York before the American Society of Naturalists,[12] I gave the reasons which seemed to me conclusive in favor of this extension of the elective system and, with your permission, I will take the liberty of presenting as briefly as possible the views there set forth.

In the first place, it may be assumed that a medical school of the first rank should be an institution in which the most advanced instruction in all departments of medicine can be obtained, and on this assumption it is, of course, impossible to arrange a course of study that every student must follow in all its details, for, in the time which may properly be devoted to a course of professional study, it is quite impossible for even the most intelligent students to assimilate all the varied information which such a school may be reasonably expected to impart.

It seems, therefore, to be evident that in arranging a course of medical study a distinction must be made between those subjects which it is *essential* that *every* student should know and those subjects which is *desirable* that *certain* students should know, that is, between those things of which no man who calls himself a physician can afford to be ignorant and those which are important for certain physicians but not for all; in other words, provision must be made both for required and for elective studies. The task of drawing the line between the essential and the desirable in medical education will require the greatest possible good judgment and readiness for mutual concession on the part of those engaged in the work, but there is no reason to fear that the difficulties will be found insuperable when the importance of the change has once been recognized.

Any one who is familiar with the existing methods of medical instruction is aware that in nearly every department many things are taught which are subsequently found to be of use to only a fraction of those receiving the instruction. Thus, the surgical anatomy of hernia is taught to men who will subsequently devote themselves to dermatology, future obstetricians are required to master the details of physiological optics, and the microscopical anatomy of muscles forms a part of the instruction of men destined to a career as alienists. Now no one can doubt the propriety of including instruction on all these subjects in the curriculum of a medical school, but it may be fairly questioned whether every student should be forced to take instruction in them all.

To better indicate the nature of the reform which I am advocating, allow me to describe a possible arrangement of a course of study in the department of physiology, with which I am of course more familiar than with any other. An experienced lecturer will probably find it possible to condense into a course of about forty or fifty lectures all the most important facts of physiology with which every educated physician must necessarily be familiar. Attendance upon

[9] C. W. Eliot: Atlantic Monthly, October, 1899, p. 443.
[10] C. L. Smith: Loc. cit., p. 219.
[11] Bulletin Harvard Medical Alumni Association, No. 8, p. 40.
[12] See Science, December 30, 1898, and Boston Medical and Surgical Journal, December 29, 1898.

these lectures, combined with suitable courses of text-book instruction and laboratory work, would suffice to guard against gross ignorance of physiological principles. In addition to this work, all of which should be required, short courses, of not more than eight or ten lectures each, should be provided, giving advanced instruction in such subjects as the physiology of the special senses, cerebral localization, nerve-muscle physiology, the internal secretion of glands, the physiology of the heart, circulation and respiration, the digestive secretions, the reproductive organs, etc. These courses should be elective in the sense that no student should be required to take them all. Each student might, however, very properly be required to choose a certain number of courses, which when once chosen become, for the student choosing them, required courses leading to examinations. There is, in my opinion, no doubt that an arrangement of instruction similar to that here suggested for physiology could be advantageously adopted in the departments of anatomy, histology, bacteriology, medical chemistry, pathology, surgery, and in the courses of instruction in the various special diseases, such as dermatology, ophthalmology, etc.

In the existing state of medical education the introduction of the elective system in some form or other seems to be an essential condition to any further important advance, for the curriculum of most of our schools is already so crowded that no considerable amount of instruction can possibly be added. Various arguments may, of course, be advanced in opposition to the change. It may perhaps be urged that no choice of studies can be made without determining to some extent the direction in which the work of a future practitioner is to be specialized, and that such specialization cannot be properly and safely permitted until the student has completed his medical studies. To this it may be answered that, whatever may be the dangers of too early specialization, the dangers of crowding the medical course with instruction of which many students do not feel the need, and of thus encouraging perfunctory and superficial work, are certainly no less serious. It is, moreover, a matter of common observation among teachers in medical schools that a certain number of students very early make up their minds either that they will become surgeons, obstetricians, or specialists of some sort, or, on the other hand, that they have a strong aversion to certain branches of medicine and a determination never to practise them. For such students a prescribed curriculum necessarily involves great loss of time and energy.

If it be said that under this system the medical degree will cease to have the definite meaning now attached to it, and that it will be impossible to tell from his diploma in what way a physician has been educated, it may be replied that, though the degrees of A. B., A. M., Ph. D. and S. D. are affected with exactly this same uncertainty of signification, their value seems in no way diminshed thereby. As long as the M. D. degree stands for a definite amount of serious work on medical subjects, we may be reasonably sure that those who hold it will be safe custodians of the health of the community in which they practise.

If it be urged that the elective system in medical education will lead to the production of a class of physicians who, owing to the early specialization of their work, will be inclined to overrate the importance of their specialty and to see in every disease an opportunity for the display of their special skill, it may be pointed out that this result is apt to be due not so much to early as to imperfect instruction in the work of a specialist, and that since the elective system tends to encourage thoroughness in special instruction, the evil may be expected to diminish rather than to increase.

METHODS OF INSTRUCTION.

Having thus recognized the necessity of remodelling our conception of the subject matter to be taught, and noted the importance of distinguishing between the essential and the desirable in medical education, we must next consider by what methods the needed information may be best imparted and the necessary training secured. There is perhaps no way in which modern educational methods differ more from those of an earlier period than in the greater prominence given to object lessons. Beginning with the kindergarten, the child is trained to cultivate his power to observe accurately and to manipulate skilfully, and through his school and college life prominence is given to the objective side of education to an extent which would have seemed to the book-trained pedagogues of a former generation but ill adapted to provide the well-stored mind which it was thought to be the principal object of education to secure. In the professional schools also the reaction against purely didactic methods has been strongly felt. Even in those professional pursuits to which the object method might seem at first sight least applicable, in the study of the law, the so-called "case method" of instruction has been found to exert a vivifying influence.

In medical education in this country it is interesting to note that in the very beginning the instruction was more objective in its character than at a somewhat later period. In those early days it was in the office of his preceptor and at the bedside, as his actual assistant, that the embryo physician was initiated into the mysteries of his calling. Then followed a period when it was clearly perceived that the trained mind is necessary to interpret the data of observation, and that mental training is essential to correct observing. Hence schools were established to provide this training by means of systematic didactic lectures covering all the departments of medicine and usually extending over not more than four months. These schools were intended at first merely to supplement the work of the preceptors, but in process of time the relative importance of these two educational agencies was reversed and the work of the preceptors became supplementary to that of the schools. The function of the preceptors finally became so subordinate that their names no longer appeared in the catalogues, though this did not always indicate that they had ceased to afford students opportunities for practical clinical work.[13]

The schools, once established, grew chiefly by an increase in the length and number of the lecture courses as new and important subjects forced themselves upon the attention of the medical profession. Against this undue extension of purely didactic methods of instruction a reaction has now set in and during the last ten or fifteen years loud voices have been raised in advocacy of more objective methods

[13] See address by Henry Hun, M.D.: Albany Medical Annals, October, 1896.

than those at present in use. It is not, however, the reinstatement of the preceptor that is urged, but rather the greater use of laboratory methods in the strictly scientific departments of medical instruction and their application as far as possible at the bedside of the patient. A fruitful discussion of the relative advantages of the laboratory, the lecture and the text-book as methods of medical education cannot be undertaken without a recognition of the fact that this education has a double object. In the first place, the faculties of the student are to be so trained that he may observe carefully, reason correctly, study effectively and judge wisely; in other words, he is to be "trained for power," to use President Eliot's phrase. In the second place, there must be imparted to him a sufficiently large fraction of the acquired medical knowledge of the time to make him a safe custodian of the health of the community. Which of these two objects is the more important is a question which we need not now discuss, but even if we grant all that is claimed by the advocates of training for power it is evident that the constantly increasing range of subjects with regard to which an educated physician must be informed will greatly reduce the time which, in the curriculum of a medical school, may properly be devoted to courses of instruction not intended to impart direct and valuable information. In fact, "training for power" should be largely a function of the academic department of a university, and when undertaken in a professional school should be so directed as to impart at the same time the greatest possible amount of useful information.

Let us now consider how far the didactic and the laboratory methods of instruction are each adapted to secure these two objects of medical education. For the purpose of training for power no one can doubt the value of the laboratory method. Contact with the phenomena themselves and not with descriptions of them has a stimulating effect upon the mind of a student, the importance of which it is difficult to exaggerate, but it does not follow from this that the lecture, the recitation and the text-book are worthless as methods of training. It is here that some of the advocates of laboratory methods have committed what appears to me a serious error, such as is too apt to characterize all reform movements, the error, namely, of assuming that, because one proposition is true, another proposition, not logically inconsistent with it, must be untrue. "These gentlemen," as Professor Howell [14] has expressed it, "having become possessed of the golden truth that the best knowledge is that which comes from personal experience, seem disposed to deny all value to knowledge communicated from the experience of others." We are told, for instance, by Dr. Burr [15] that the didactic lecture "dates from the time when printing was unknown and manuscripts were rare and almost priceless and the only means of communicating knowledge was by word of mouth. To-day it is in large part an anachronism, because the time devoted to it could be put to better uses."

In his able address [16] at the last Yale University Medical Commencement, my colleague, Dr. C. S. Minot, expressed himself as follows: "The very best that can be said of a lecture or a book is that it describes well the knowledge which some one possesses. There is no knowledge in books. . . . A book or a lecture can serve only to assist a man to acquire knowledge with lessened loss of time. Knowledge lives in the laboratory; when it is dead we bury it decently in a book. . . . A lecture is a spoken book." I venture to believe that Professor Minot's students will hardly agree with this estimate of the lifeless character of either his written or his spoken instruction.

In place of these rather disparaging views of the importance of a didactic lecture, I am inclined to accept Dr. Weir Mitchell's [17] opinion that "The best lecturing does not so much think for you as invite you to think along suggested lines of inquiry." If, as has been claimed, "the passive attitude of listening does not demand of the students intelligent thought," [18] the fault must lie with the lecturer and not with the method of instruction. In every department of medicine advanced instruction necessarily deals with subjects which lie within what Foster has called the "penumbra" of solid scientific acquisition and about which conflicting views are therefore certain to be held. It is in inviting thought with regard to the evidence on which these views rest that the experienced lecturer has his best opportunity to train the minds of his hearers. Other opportunities are also afforded by the historical presentation of subjects about which differences of opinion no longer exist, for there are few things more instructive than to follow up step by step the lines by which our knowledge has advanced, noting the marks which distinguish the paths which have been trodden successfully from those which have turned out to be "no thoroughfare." Even better opportunities for mental training than those which the lecture-room presents are afforded by the recitation, for here the minds of the teacher and the pupil are brought most closely into contact, the pupil's difficulties are appreciated by the instructor and the point of view of the teacher can be learned by the pupil. It has always seemed to me that no higher enjoyment falls to the lot of the teacher than that which he experiences when, by a series of carefully considered questions, he leads his pupil onward from the known to the unknown and notes the gleam of intelligence which illumines his countenance as a subject, previously obscure, becomes clear, as a result of his own mental operations guided by his teacher's skilful questions. It thus appears that no monopoly of opportunities for mental training can be claimed for the laboratory method of instruction.

We must next enquire, What are the relative advantages of the laboratory and didactic methods as means of imparting information? Here we at once perceive that a great deal will depend upon the kind of information to be imparted. Certain subjects are much better adapted than others to be taught in the laboratory. The student of anatomy, for instance, can secure the greater part of the information which he needs by laboratory methods, that is, in the dissecting-room, though a short course of lectures on descriptive anatomy in which an experienced teacher emphasizes the salient features of the subject will probably always be indispensable. Physiology and pathology (including physiological chemistry, pharmacology and bacteriology) are subjects in which lab-

[14] The Michigan Alumnus, January, 1900, vol. vi, p. 143.
[15] Philadelphia Medical Journal, October 21, 1899.
[16] Science, July 7, 1899.

[17] University Bulletin, vol. iii, p. 85, Philadelphia, December, 1898.
[18] W. B. Cannon, A.M.: The Case Method of Teaching Systematic Medicine. Boston Medical and Surgical Journal, January 11, 1900.

oratory instruction may be unquestionably much more freely used than is customary at the present time. The recent experience of the Harvard Medical School, in which the laboratory courses in these subjects have been greatly extended, has furnished conclusive evidence of the value of this method of instruction as a means both of imparting information and of stimulating the mind of the student. It must be remembered, however, that, as Dr. Welch [19] has said, "laboratory methods are extremely time taking and are not adapted to teach the whole contents of any of the medical sciences. It is, of course, hopeless to attempt to demonstrate practically all of even the more important facts that the student should learn."

Moreover, observed facts are often apparently inconsistent with each other. Equally competent observers differ in their interpretation of them. Yet, because the last word of science has not been spoken on these subjects, it would be a mistake to exclude them from the medical curriculum. The student should rather be carefully instructed as to researches which have not yet yielded definite results. The most profitable way of reconciling conflicting observations should be pointed out, and he should be shown in what direction the search for truth can be prosecuted with the best prospect of success. He will then be able to appreciate the value of new observations and to assign to their true position the reported discoveries in medical science.

Instruction of this sort can, of course, be given only by an experienced lecturer who has mastered the subject of which he treats. It is in this kind of teaching and in the exposition of those facts and principles which cannot properly be made the subject of laboratory instruction to students that the didactic lecture of the future will probably find its principal field of usefulness. In the latter direction, however, the field is more restricted than might at first sight appear, for the amount of practical work that can be successfully performed by first and second year students in a physiological or in a pathological laboratory is surprisingly large. In the physiological department of the Harvard Medical School, for instance, during the current academic year, each pair of students in a class of one hundred and eighty has been furnished with a kymographion, a capillary electrometer, a moist chamber, an induction coil, unpolarizable electrodes, etc., and the most important experiments of nerve-muscle physiology have been successfully repeated. The fundamental experiments in the physiology of the circulation, respiration, etc., are to be performed in a similar manner. In the pathological laboratory the students, working in sections of ten, have had an opportunity of producing for themselves and studying experimentally the most important pathological degenerations. They have also studied in the same way the principal infectious diseases. In the anatomical department also, while the number of didactic lectures has been diminished, the whole class has had largely increased facilities for the practical study of bones and of various special organs.

Still, after making due allowance for the legitimate expansion of laboratory teaching, it is probably safe to say that a systematic course of lectures in each of the medical sciences will never be found to be superfluous, and that the day is probably far distant when the lectures will be merely "explanatory of the experiments." [20]

We have thus far considered the relative advantages of didactic and laboratory methods in teaching the medical sciences, but the agitation in favor of more objective teaching has extended also to the clinical departments of medicine and the organization of "clinical laboratories," in which the cases of hospital patients may be studied by the most refined methods of physiological and pathological research, is a natural outcome of this agitation. In fact, however, so far as instruction is actually given at the bedside, clinical medicine has always been taught by means of object lessons. In many of our schools this instruction has been supplemented by so-called "conferences," exercises in which a student reports before the class a case which he has himself examined, giving diagnosis, prognosis and treatment. The subject is then discussed by the class and finally by the instructors.

Wherever actual cases of disease are thus utilized for teaching purposes the instruction is always likely to be more or less haphazard and unsystematic, for the diseases studied will be those of which actual cases happen to be available. To remedy this difficulty it has been recently proposed [21] to substitute the study of hospital records of cases for the examination of the cases themselves, a method quite analogous to that known as the "case method," which has long been used with great success in training students in the Harvard Law School. It will thus be possible to group cases so that they will throw light upon each other and, though the student will miss the stimulus of contact with the actual patient, the method presents so many distinct advantages that it will doubtless commend itself to many teachers of clinical medicine and of theory and practice.

It is thus evident that the reaction against purely didactic methods of instruction is well under way. It is a movement to be heartily welcomed, for there can be no doubt that medical students have been, and still are, too much lectured, but, like all other reforms, it should be carefully guided lest useful as well as useless things be swept away. It should be borne in mind that it is quite as easy to abuse the laboratory as the didactic method of instruction and that in all schemes of education a good teacher with a bad method is more effective than a bad teacher with a good method. As Professor Howell [22] has well remarked, "Courses of lectures that if analyzed would be found to be top-heavy and lop-sided and otherwise possessed of an instability that should have ensured failure have been saved and made instruments of great value by the mere earnestness of the teacher."

DISTRIBUTION OF WORK.

The next question which I shall ask you to consider is that of the proper distribution of the work of a medical student. Thirty years ago no such question seems to have presented itself to the minds of instructors in medicine. The medical faculties of that time contented themselves with providing each year courses of lectures covering all the departments of medicine, as they were then understood, and every student was expected to attend as many of the lectures

[19] Higher Medical Education and the Need of Its Endowment. The Medical News, July 28, 1894.

[20] Porter: Boston Medical and Surgical Journal, December 29, 1898.

[21] W. B. Cannon, A.M.: The Case Method of Teaching Systematic Medicine. Boston Medical and Surgical Journal, January 11, 1900.

[22] The Michigan Alumnus, January, 1900, vol. vi, p. 141.

as he saw fit. Between 1870 and 1880 the fact that there is a natural sequence in medical studies became generally recognized and graded courses of instruction were established in the principal medical schools of the country. The grading was not, however, carried sufficiently far. Thus, instruction in both anatomy and physiology was generally given simultaneously through the whole of the first year, though the knowledge of structure should logically *precede* a study of function.

The time seems now to have come for taking another step in grading medical instruction, and during the academic year now drawing to a close instruction in the Harvard Medical School has been given in accordance with a plan of which the guiding principles are concentration of work and sequence of subjects. Thus in the first half of the first year the students devote themselves exclusively to the study of anatomy, including histology and embryology. In the second half year they are occupied with physiology, including physiological chemistry, while in the first half of the second year pathology, including bacteriology, engages their attention. It is perhaps too early to pass a final judgment upon the value of the method, but thus far both teachers and students seem to regard it as a success. The result seems to have justified the opinion of its advocates that the work of the student would be made "easier by concentrating his thoughts upon one subject instead of dissipating his attention upon many subjects." [23] Nor have its opponents found any justification for their fears that the average brain would become fatigued and unreceptive by too close application to one subject, for the sciences of anatomy, physiology and pathology "are not narrow, hedged-in areas but rather broad and diversified domains composed of many contiguous fields," [24] in passing from one to another of which the student may rest his mind without interrupting the continuity of effort essential to effective work.

An obvious objection to this method of concentrating instruction is the large amount of work which it imposes upon the instructors. There is no doubt that the labor of teaching every day in the week may task the powers of even the most enthusiastic instructor, but it has been found that the laboratory work, which has occupied from two to three hours every forenoon, has been conducted with much less fatigue than was anticipated. In fact, students, when supplied with printed directions for work and with the necessary apparatus, need remarkably little supervision. In the physiological laboratory it was found that one instructor could readily supervise the work of fifteen pairs of students, and the experience in the anatomical and pathological departments was of a similar sort.

EXAMINATIONS.

Closely connected with the questions of method of instruction and of distribution of work is the subject of examinations. With regard to these tests of our educational methods opinions vary even more widely than with regard to the methods themselves. There is only one point, as Professor Exner has remarked, on which teachers are practically united, and that is "that an examination is a necessary evil." Every examiner knows only too well that an examination is but a very imperfect test of knowledge, but few are ready with any suggestion of a substitute. Much of the confusion which prevails in the discussion of this subject would be removed if the objects to be secured by an examination were more clearly apprehended. Professor Exner [25] points out that examinations may be broadly divided into two classes, namely, the *Controlprüfung*, to test the faithfulness with which the student has performed his daily tasks, and the *Reifeprüfung*, to determine the amount of his permanently acquired knowledge of medical subjects.

The examination which, at the end of the year, covers the whole ground of the twelve months' instruction, and which is so common in our schools, belongs to neither of these two classes and is really a concession to a very natural wish of the students to get the examination "out of the way" while the subject is still fresh in their minds. Having little justification from an educational point of view, we may hope to see it abandoned when the extension of laboratory methods provides in the note-book and graphic records of each student the evidence of his daily work and thus either renders a further examination unnecessary or prepares the way for a final test of his fitness to receive his diploma of M. D. Whether the written or the oral examination affords the better method of applying this test is a question about which opinions vary. The fact that some persons can write more readily than they can talk, while others can talk more readily than they can write, seems to be a reason for providing a mixed method of examination in which each individual may have an opportunity of appearing to the best advantage.

CONCLUSIONS.

If the views here presented are well founded we may expect that a medical school of the first rank will in the immediate future be organized and administered somewhat as follows:

(1) It will be connected with a university, but will be so far independent of university control that the faculty will practically decide all questions relating to methods of instruction and the personnel of the teaching body.

(2) It will offer advanced instruction in every department of medicine and will therefore necessarily adopt an elective system of some sort, since the amount of instruction provided will be far more than any one student can follow.

(3) The laboratory method of instruction will be greatly extended and students will be trained to get their knowledge, as far as possible, by the direct study of nature, but the didactic lecture, though reduced in importance, will not be displaced from its position as an educational agency.

(4) The work of the students will probably be so arranged that their attention will be concentrated upon one principal subject at a time and these subjects will follow each other in a natural order.

(5) Examinations will be so conducted as to afford a test of both the faithfulness with which a student performs his daily work and of his permanent acquisition of medical knowledge fitting him to practise his profession.

If I have clothed these conclusions in the language of prophecy it is because the title of my discourse has laid this necessity upon me. In forecasting the immediate future, I have borne in mind the history of the

[23] Minot: Science, July 7, 1899. Reprint, p. 22.
[24] Porter: Boston Medical and Surgical Journal, December 20, 1898. Reprint, p. 11.
[25] Wiener klinische Wochenschrift, No. 3, 1900. Reprint, p. 3.

immediate past, and if I have failed to read aright the indications of the lines on which our medical schools are to advance, it must be remembered that the development of a biological science and of its dependent arts not infrequently takes place in totally unexpected directions, thus introducing into the path of educational progress perturbations which may well defy prediction.

PERFORATING ULCER OF THE DUODENUM.[1]

BY ROBERT F. WEIR, M.D., NEW YORK,
President American Surgical Association; Surgeon to the Roosevelt Hospital, etc.

THE interest that has been lately directed toward the surgical treatment of gastric perforations has also been turned to the operative relief of the allied round or peptic ulcer of the duodenum. This affection is much rarer than the ulcer of the stomach, is much more difficult to properly diagnosticate and is more apt to be confounded with other more distant surgical lesions, such as appendicitis, etc.

Site. — Its site is in the upper part of the duodenum, and according to Morot[2] and Vonwyl[3] it is always situated within 1.5 inches of the pylorus; but Schwartz[4] gives one case where the perforation existed on a level with or a little below the ampulla of Vater and thus allowed a free escape of bile into the peritoneal cavity. The figures given by recent authorities show that in the 262 collected cases of Collin[5] the perforation occurred 242 times within 2 inches of the pylorus, in the descending portion 14 times, in front of the aorta 3 times and in the ascending portion 3 times. Or, expressing the same a little differently, 162 of the 262 cases were situated at 2 to 4 millimetres from the pylorus; 75 close to it; 4 encroached on the pylorus itself, and two extended through pylorus to duodenum and to the stomach. Perry and Shaw have reported in *Guy's Hospital Reports*, of 1894, 141 cases of duodenal ulcer, 123 in the first part of the duodenum, 16 in the second part and only 2 in the third part.

Number. — These ulcerations are usually single. Collin says that one ulcer was found in 80 per cent. of his cases; two ulcers in 11 per cent.; and three or four ulcers in 4 per cent. Morot, in 22 cases, found 18 had a single ulcer; 2, two ulcers; 1, three ulcers and 1, four ulcers.

Location. — These perforations are encountered most frequently on the anterior wall. Oppenheimer[6] in 15 cases noted that the perforation had taken place in the anterior wall 11 times; 3 times posteriorly and once superiorly. Of the 119 cases of Collin in which the first portion of the duodenum was perforated, in 68 it occurred on the anterior wall of the bowel; in 39 the posterior wall; in 10 the superior, and in 1 the inferior portion. In 8 ulcers perforating in the second portion of the bowel, 5 occurred in the internal wall, 2 in the posterior and 1 in the external wall; and in the ulcers presenting in the third part of the duodenum, 4 in number, in 3 the anterior and superior walls were involved, and in 1 the posterior wall. This is of considerable surgical importance. The anterior perforations are, for obvious anatomical reasons, less likely to be closed off by adhesions, and hence a free and rapid involvement of the peritoneal cavity takes place in the openings here situated. Reckmann[7] states that half the cases of duodenal ulcer die from perforation into the peritoneal cavity.

Frequency of perforation. — Perforation is said to take place 180 times in Collin's 262 cases, or in 69 per cent. Chvostek, however, places the frequency of perforation at about 42 per cent. of the cases. In these 262 cases there was a generally diffused and fatal peritonitis 125 times. But occasionally in anterior openings, but more commonly with the perforations existing elsewhere, adhesions or ulcerations with abscess and hemorrhage of the duodenal wall or adjacent organs have been encountered. Examples of such complicating lesions are subphrenic abscess, which follows more commonly a perforation in the superior wall of the horizontal portion of the duodenum (according to Oppenheimer). Liver and pancreatic adhesions are at times met with (Oppenheimer gives 6 cases and Collin 38 cases of such adhesions). Perforations into the gall-bladder have been reported, but more important and dangerous are the ulcerations into the aorta (Stich,[8] 2 cases), or the vena porta (2 cases, Rayer and Habershon), or the superior mesenteric vein (Warfinger), or the hepatic artery (Vonwyl). The ulceration has been also known to invade the adjacent colon (2 cases, Murchison and Saunderson).

Sex. — Duodenal perforations are more common in men than in women; about 79 per cent., according to Collins, are in males. From the tables of Morot, Kraus, Lebert and Chvostek I have gathered 176 cases of duodenal ulcers, and of these 144 were in men and 30 in women.

Cause. — This has been explained by Boas[9] to be due to the rougher food, and, in men, to their addiction to alcohol and tobacco, which intensify the acidity of the gastric juice and thus act unduly on the glandular mucous membrane of the duodenum, which is not protected until the alkaline bile and pancreatic fluid is poured into the intestine at the opening of Vater. Koch and Ewald by giving to animals 5 per 1,000 HCl caused duodenal ulcers to appear. Pyloric spasm, Talma states, produces necrosis and anemia of the membrane there. On the other hand, alcoholics are not found to be prone to duodenal ulcer, and though the spasms and lesions of gastric hyperacidity, which are now accepted as a causative factor of stomach ulcer, will doubtless apply in many instances to the development of a similar duodenal damage, there are other causes for duodenal ulceration to be mentioned beside the foregoing.

Burns. — The principal and best known, though now somewhat disputed, factor in their etiology is the influence of external *burns*. Holmes,[10] for instance, states that in 125 cases of burns 16 cases of duodenal ulcer were found; Perry and Shaw in 149 cases of burns met with duodenal ulcers 5 times; and in Collin's 297 cases of duodenal ulcer he states that burns produced the ulceration in 38 instances. According to Holmes, the duodenal ulcerations after burns present themselves from the seventh to the fourteenth day, but Ponfick found in one instance a duodenal ulcer within

[1] The Presidential Address in Surgery delivered before the American Surgical Association, Washington, May 1, 1900.
[2] Thèse de Paris, 1892.
[3] Ulcer Perforans Duodeni. Thèse de Paris, 1893.
[4] Ulcère perforante du duodenum. Bull. et Mem. Soc. de Chirurg., January, 1898.
[5] Thèse de Paris, 1894.
[6] Das Ulcers Pepticum Duodenale. Thesis, 1891.
[7] Ulcer Duodenale u. seine Diagnose, 1893.
[8] Deutsch. Arch. klin. Med., 1874.
[9] Diagnostik u. Therapie der Darm Krankheiten, 1899.
[10] System of Surgery, vol. i, p. 733.

eighteen hours after the reception of the burn. Curling also had a case where symptoms of duodenal ulcer were recognized one day after the burn, and the autopsy confirmed the diagnosis.

The explanation most accepted at the present day is that this complication of a burn is due to septic infarctions such as may be developed in frost-bite, of which Billroth and Adams each cites a case, or in erysipelas 8 instances, or in tuberculosis (Latham). In the cases where trichinosis (Ebstein), or heart or kidney disease, or cirrhosis or hepatic or other carcinomata (Latham) exist, it is not quite so easy to trace the connection, though embolism even here has largely to deal with the question. The recognized explanation offered by Hunter[11] and often quoted seems inadequate to elucidate the relation between a cutaneous burn and a duodenal ulcer. This observer proved that in animals treated by injections of toluylendiamene the bile was so changed that when discharged into the duodenum ulcerations rapidly developed. His idea, therefore, was naturally that the alteration of the cutaneous covering so altered the bile as to beget the complicating duodenal ulcerations. Unfortunately duodenal ulcers are so rarely met with on a level with or below the bile discharge into the bowel that this at once disposes of the need of calling on the liver and pancreas as accomplices in their production. That septic infarction is the most probable cause of duodenal difficulties after burns may also be fairly inferred by the later collection of Lockwood, who in 138 cases of burns treated with more or less approach to an antiseptic idea noted the complication of duodenal ulcer in but one instance. A cancerous ulceration is almost unknown, but 4 cases (Eichert, Ewald, Schrotter and McKenzie) have been recorded.

Frequency. — A duodenal ulcer is, according to statistics, a rare lesion. Collin, whom one is compelled to quote by the worth of his collected cases, in a range of eleven years could only find 26 cases. Houze[12] in three additional years could add only 3 more cases, though Darras[13] more than one year later found 5 others. Since attention has been given to the subject and particularly to the surgical aspect of it by the present writers in 1896, when 9 cases were reported as having undergone surgical treatment, there have been reported 41 operations for this disease.

The relative frequency as a cause of death deduced from autopsies is as follows:

Willigt . .	1,600	sections	with	74	gastric	ulcers	and 2	duodenal.
Stark . .	384	"	"	36	"	"	3	"
Grünfeld .	1,150	"	"	124	"	"	4	"
Steiner . .	3,085	"	"	89	"	"	12	"
Vonwyl . .	12,806	"	"	98	"	"	3	"
Latham . .	8,192	"	"	not given	"	"	12	"
Perry and Shaw	17,652	"	"	"	"	"	70	"
N. Y. Hospital (unpublished)	1,000	"	"	"	"	"	2	"
	49,369			421			108	

or about .2 per cent. in frequency.

Kinnicutt[14] however, in 30,000 autopsies, which probably included many embraced in the above table, has given a rather higher percentage of frequency, placing it at .4 per cent. Though the proportion is a small one, stress must be laid on the fact that from 40 per cent. to 70 per cent. of these ulcers perforate, with an almost invariably fatal result. The relative proportion of gastric to duodenal ulcers is as 12 to 1 (Burwinkel).

Age. — As to the age at which it is most common, it is encountered at all ages. Chvostek in 87 autopsies on children under ten years of age found 5 duodenal ulcers, of which 1 was seen in a seven weeks' old child, another in a child four days old, and a third in a babe of three hours. Collin's table is the most complete in this respect, and it is here presented. In 297 cases of duodenal ulcers they were met with:

Under 10 years of age	42 times.
Between 10 and 20	24 "
" 20 " 30	43 "
" 30 " 40	52 "
" 40 " 50	46 "
" 50 " 60	41 "
" 60 " 80	28 "
" 81 " 95	3 "

Progress. — It has already been strongly stated that nearly all perforations of the duodenum will prove fatal from a generalized peritonitis unless surgical intervention should relieve the patient. What this consists of, what are its results and its difficulties, will be considered a little later. At present one must take account of the somewhat encouraging fact that all duodenal ulcers do not go into this severe complication of perforation. In 70 autopsies Perry and Shaw found decided evidences of repair in nearly 50 per cent. of the cases, and Collin also recorded 39 instances of cicatrized ulcerations. These cured ulcers may prove innocuous, but they can, as in the stomach, narrow to a dangerous degree the lumen of the intestine and even encroach upon the bile opening, or make such traction upon it as to bring about gastric and hepatic dilatations. Some of the most brilliant surgical triumphs have been obtained in relieving such obstructions, of which examples may be subsequently found in this article.

Symptoms. — The symptoms of a non-perforated duodenal ulcer are, as shown by Schwartz, frequently very slight. In 20 out of 25 instances of perforation, the patients were in apparent good health or so slightly indisposed that they had not consulted a physician. In only 5 cases were there previous stomach symptoms; of these 1 was thought to have dyspepsia, and 2 to have a gastric ulcer. In my own collection of 51 cases, treated by operation, gastric symptoms previously existed in 25 out of 34 cases.

The usual signs may be given as follows:

(1) The *pain* when characteristic occurs several hours after eating and may be slight or severe, and presents itself just below the gall-bladder, and may reach to the median line or to a level with the navel. Many times the pain is absent. Reckmann in 80 cases found 16 in which little or no pain existed. Pressure, particularly over the region to right of the twelfth thoracic vertebra, occasionally elicits pain. Swallowing of a sour lemonade or a strong alcoholic drink may arrest the pain by bringing about a pyloric contraction, but Pagenstecher[15] denies the value of this test.

Vomiting is present in about 17 per cent. of the cases, but it is of reflex character. It is of diagnostic importance if, like the pain, it shows itself from an hour or so up to several hours after a meal, and the

[11] British Medical Journal, vol. i, p. 76, 1890.
[12] De l'ulcère perforant du duodenum. Thèse de Paris, 1896.
[13] De la perforation de l'ulcère simple du duodenum. Thèse de Paris, 1896.
[14] Jacobi: Festschrift, 1900.
[15] Die chirurgische Behandlung des Duodenalgeschwürs. Deutsch. Zeit. f. Chir., August, 1899.

matters rejected are broken-down food mixed often with bile and blood.

The right shoulder pains are noted by Schwartz as occasionally to be recognized. According to Vonwyl and Buequoy, the pains are often slight from the comparative immobility of the duodenum, and vary from queer indescribable sensations to severe radiations of distress. Vomiting, when it occurs, relieves the pain.

Jaundice, if present, which is rare, may be due to simple duodenal tumefaction or to cicatricial contraction on the papilla.

Hemorrhage is to be expected in about one-third of the cases of non-perforating ulcers. Probably it is even greater than this, as Oppenheimer found blood in the stools of one-half of his 34 cases, and Krauss says it occurs even more frequently than this ratio. This bleeding can be severe and show itself by mouth as well as per rectum. It can speedily prove fatal, as larger vessels are opened than by a gastric ulcer. Usually the blood is discharged from the bowels in a tarry condition, which bespeaks a high origin of the hemorrhage and an exposure of some duration to the action of intestinal secretions. This is spoken of as melena. Its color may be, however, a bright hue, and recently, with Dr. Peabody, the question of the presence of a duodenal ulcer in a patient with intestinal hemorrhage and right-sided epigastric pain and distress some time after eating, was negatively decided because the blood discharged per anum was of bright red color and unclotted. As the patient, moreover, had hemorrhoids, the possibility of this origin led to the confusion in diagnosis. This escape of fresh unchanged blood from the bowels is recognized by Vonwyl, and some emphasis should hereafter be placed on this possibility. The profusion of the hemorrhage may be much beyond that encountered in gastric ulcer, for larger vessels may be involved. Collins gives 12 instances in which the blood came from the pancreoduodenal artery; three times the gastro-epiploica dextra was opened into, twice the pancreatic artery, once the hepatic, twice the aorta, twice the vena porta, and once the superior mesenteric vein. Pagenstecher states that the ulcers on the posterior wall are more apt to bring about hemorrhage than the anterior ones, as the vessels are more abundant and larger there. Burwinkel [16] says that, excepting in vicarious menstruation and typhoid fever, intestinal hemorrhage in large amounts is very rare and should excite suspicion of gastric or duodenal ulcers. This writer, in spite of all that has been advanced by Nothnagel, Ewald, Lemke, and latest of all, by Kinnicutt,[17] that in the great majority of cases a differential diagnosis from gastric ulcer is impossible, claims that by a careful study of the symptoms he has been able to diagnose 5 cases of duodenal ulcers in the last few years.

Diagnosis. — The following contrasting symptoms have been grouped by Vonwyl as an aid to this end:

Gastric ulcer. — (1) More frequent in women, twenty-fifth to fiftieth year; (2) pain promptly after eating; (3) relieved by vomiting; (4) frequent biliary, mucous and food vomiting; (5) marked dyspeptic symptoms; (6) frequent bloody vomiting; (7) more seldom bloody stools.

Duodenal ulcer. — (1) Occurs most frequently in males; (2) pain in right hypochrondrium or to right of parasternal line; (3) comes on two to four hours after meals; (4) no relief by vomiting; latter not frequent; (5) bloody stools (melena or bright blood) more common than bloody vomiting; (6) if jaundice is present this would contribute to the diagnosis.

That medical and surgical education in this line is progressing has also been brought out in the cases of operations which form the basis of this paper. Here it will be seen that notwithstanding that the greater part of them have been treated as of appendiceal or other origin, surgeons awake to the possibilities of the case are making shrewder diagnoses, and the reproach which was good up to a year ago, that no operation for a previously recognized perforated duodenal ulcer had yet been performed, no longer holds good. It may be expected that as the detection and treatment of a perforated gastric ulcer has so rapidly and so satisfactorily progressed from 1892, when the writer was only able to add to his first operation of this kind but 4 other instances, while now over 100 cases each year are operated on with a mortality that has fallen (if operated on within twelve hours) from 39 per cent. to 17 per cent. (Keen [18]), that a similar improvement will take place in the recognition and proper treatment of duodenal ulcers.

The picture is a far different one when the duodenal ulcer perforates, and particularly if anteriorly, which is the most common site of this complication. Here there is usually no withholding adhesion, and a rapid invasion of the peritoneum is probable.[19] If the stomach is yet filled, the extravasation may take an anatomical course somewhat in the order spoken of by Pagenstecher, and which is in accord with my own analogous clinical experience in three perforations of the gall-bladder. Fluids escaping from the duodenum or gall-passages flow at first between the liver and the colon and thence along the ascending colon sometimes to the outside of the bowel, and sometimes between the omentum and the parietal peritoneum towards the iliac fossa. From this point they may pass over to the sigmoid flexure and into the pelvis. Given, therefore, such a free course and with a plentiful pouring out of acid fermenting food and gas through a direct though small (2 to 8 millimetre) opening, the symptoms presented would naturally be severe.

Great pain is usually felt frequently at the epigastrium or to the right of this region, as was noted 26 times in 47 of my cases. It has a few times also been observed at the umbilicus and in the left side, but in 23 others of the 47 instances it was simply recorded as abdominal pain. Vomiting often follows the attack of pain. It occurred in 28 out of 34 instances. Shock is not often met with, but may be severe and fatal. Peritoneal symptoms rapidly develop, with a tendency in some cases to be localized in the upper part of the abdominal cavity and in the right side; when these signs show themselves mostly to the right and at or below the level of the umbilicus, it necessarily simulated an appendicitis. When the liver dulness has been dissipated up nearly to the mammary line, air extravasation may be suspected, and when accepted as present, it will aid in concentrating the diagnosis. This symptom of liver resonance, unless

[16] Das peptische Duodenalgeschwürs. Deutsch. med. Wochenschrift, December 29, 1888.

[17] Jacobi: Festschrift, 1900.

[18] British Medical Journal, June 11, 1898; Mayo: Surgery of the Stomach, Lancet, March 17, 1900.

[19] It should also be remembered that generally the duodenum in its first part is free and covered by peritoneum, so that extravasation is likewise possible through a posterior perforation in this region. It is, however, in this case, more likely to enter the omental bursa (lesser omental cavity) or invade the retroperitoneal tissues.

marked, is so often found to be due to a distended colon that it should not be much relied on.

In considering the diagnosis of a perforated duodenal ulcer as just given, I cannot but feel that more weight and attention should be given, first, to the previous history, which shows, contrary to the opinions of many anterior observers, that in the 51 collected cases of operations for the relief of such conditions there was a history of gastric or dyspeptic symptoms given in 25 out of 34 cases where the point was noted; secondly, and also important, is the fact alluded to on a previous page that the initial or early pain was developed in 26 instances out of 47 in the epigastrium, and in the right hypochrondrium 13 times. The third factor of value in the diagnosis, as well as the treatment, of the symptoms of perforation peritonitis, whether from stomach, duodenum, gall-bladder, appendix or any other part of the intestinal tract, is the prompt resort to an exploratory incision. This need of an early solution of the site of a perforation has been already shown in the cases of a gastric perforation in an article [20] embracing 78 cases operated for this trouble. The mortality in these cases clearly depended on whether the patient underwent surgical intervention within twenty-four hours from the inception (that is, the pain) of the perforation. This is yet more strongly marked in the latest collections of this class of troubles by Mayo,[21] who states that in 429 cases of gastric perforations those operated on in the first twenty-four hours were 82, where 47 recovered; 35 died (a mortality of 42 per cent.); and that in operations done after that period over 70 per cent. of the cases died. In duodenal perforations the same outcome is observable. In the 51 collected cases herewith presented of duodenal perforations, there were 25 cases where the lesion was recognized and closed at the operation; of these, 13 underwent operation after thirty hours' delay and all died; 1 case, however (No. 31), recovered after a delay of two hundred and sixteen hours, but here the perforation had formed a chronic abscess and sinus. Twelve others were operated on within that time; 8 survived, giving thus only 33⅓ per cent. of mortality. *Only*, I say, and with much satisfaction, since it marks an improvement on the statistics of Pagenstecher, which gave a mortality of 60 per cent. in the found and sewn-up duodenal ulcers by him collected. Of equal value as illustrating the increasing alertness of the surgeon is the fact that prior to 1895, in the 20 cases reported up to that time in which laparotomy was done for duodenal perforation, in 15, or 75 per cent., the ulcer was not found; in 5, or 25 per cent., it was found and sutured. In only 2 cases, or 10 per cent., was the possibility of a duodenal perforation considered. Contrast this with the 31 cases operated on since 1895, when the surgery of gastric ulcer began to be developed. Of these 31 cases the perforation was not found in only 11 per cent. It was found and sutured in 20 cases, or 65 per cent. Its presence was considered in diagnosis in 11 cases, or 35 per cent.

Another indication showing the advance in our surgical art since attention has been directed to this lesion is the circumstance that it has been possible in 13 of the more recent instances to either arrive at a correct pre-operative diagnosis or to make the alternative diagnosis varying between a duodenal and a gastric perforation. The difficulties that have been experienced are succinctly shown in the following statement:

Diagnosis wrong: Ulcer not found.	
Diagnosis as acute peritonitis	8 times.
" appendicitis	15 "
" intestinal obstruction or appendicitis	1 "
" strangulated hernia	1 "
" hydronephrosis	1 "
	26
Diagnosis wrong: Ulcer found.	
Diagnosis as acute peritonitis	5 times.
" intestinal obstruction	4 "
" appendicitis	3 "
	12
Diagnosis right or approximately so: Ulcer found.	
Diagnosis as duodenal ulcer	5 times.
" gastric or duodenal ulcer	6 "
" appendicitis or duodenal ulcer	2 "
	13

Treatment. — For the treatment of a duodenal ulcer the medical means applicable to the management of a gastric ulcer also hold good. It is but seldom that surgical aid is called for before perforation has occurred, but the cases reported by Codevilla [22] are of much surgical interest and instruction. This surgeon, for the relief of symptoms that fairly well pointed to an intractable duodenal ulceration, resorted to a gastro-enterostomy in 2 cases with a cure as the result of his intervention.[23] In some cases of perforation the shock and progress of the infection is so rapid as to bring about death in a few hours. Stevens [24] quotes a case where a fatal issue occurred within twenty-one hours after the first symptom (sudden pain) had shown itself.

Where the diagnosis has happily been narrowed down to a perforation of either the stomach, duodenum or gall-bladder, the incision to be advised is in or along the edge of the rectus muscle, 4 to 6 inches in length and starting rather low down on the abdominal wall, so as not to reach much above the liver edge but to extend far enough downward to easily get below the transverse colon, which might be necessary. Supplementing this incision in its upper third another transverse one, in the skin, to the left or toward the median line is advisable; this will permit the cross division of the fascia covering the right rectus muscle, which latter is in turn to be pulled to the left, when its posterior sheath, with the peritoneum, is also to be divided. This gives a satisfactory and largely increased exposure of the parts beneath and the subsequent suture of the upper and lower sheath of the rectus with the full replacement of the muscle adequately restores the integrity of the abdominal wall. This incision I have made many times in operations on the gall-bladder and in numerous instances of suppurating appendicitis when an increased space is needed.[25]

If gas or food material escape when the abdomen is opened, the surgeon's action is rendered more certain, and by a rapid and thorough inspection, after wiping away any obscuring fluid, of the gall-bladder, duodenum and the anterior walls of the stomach the perforation can be disclosed. If nothing is visible in these regions, the examination of the posterior gastric wall can be accomplished by either tearing through the gas-

[20] Weir and Foote: Medical News, April 25, 1896.
[21] Surgery of the Stomach, Lancet, March 17, 1900.
[22] Pagenstecher: Die chirurgische Behandlung des Duodenalgeschwürs. Deutsch. Zeit. f. Chir., August, 1899.
[23] Berg and Roux also each report a case where for a duodenal ulcer with adhesion of pyloric stenosis a similar operation was done with success.
[24] Glasgow Medical Journal, vol. li, p. 87, 1897.
[25] Weir: Medical News, February 17, 1900; On an Improved Method of Operating for Acute Suppurating Appendicitis, Medical News, March, 1899.

trocolic omentum, or by turning up the omentum and large bowel and entering the lesser omental cavity through the mesentery, as in posterior gastro-enterostomy. From the lower end of this wound, which is large enough to admit the hand, the appendical region can be explored in many instances if it should be necessary, though probably if this should be involved a separate incision might be more suitable. If a duodenal perforation exists it will generally be found on the anterior wall of the duodenum as a small round opening, rarely beyond one-quarter inch in diameter, with comparatively thin edges and rarely adherent to any adjacent intestine. Gas or fluids have frequently been seen passing from the opening, and occasionally bile, which latter may also stain the peritoneal extravasation. Mayo has suggested that an acid reaction of the peritoneal effusion might help in suggesting, prior to its discovery, a gastric or duodenal opening, but as the inflammatory effusion rapidly neutralizes the stomach acidity, this will seldom be of help.

Since several of the collected cases have shown in the abdominal extravasation the presence of recognizable medicines, such as castor oil, etc., given erroneously to move the bowels, it may be considered worth while to utilize the fact, and to give prior to the operation a certain amount of methyl blue or other innocuous colored solution to aid in the detection of the opening. When found, the perforation should be closed by a double or triple row of interrupted silk sutures. No attempt should be made, in my judgment, to excise the ulcer before suturing. This takes too much time, and the results in the collected operations show that in 7 out of 9 of the successful cases suturing alone was relied upon. In 1 only was excision and suturing employed, and in 1 other case the ulcer was closed over by suturing over it the duodenum, colon and stomach. This experience is confirmed in the large number of gastric perforations that have been treated up to date.

The suggestions given by Pagenstecher in the conduction of this operation are worthy of remembrance. They are, that the fundus of the gall-bladder when distended, lies in front of the duodenum. By raising up the transverse colon, which rests somewhat in front of and below the horizontal part of the duodenum, and by drawing it forward, this portion of the intestine is immediately revealed. Crowding the stomach and pylorus to the left and a little downwards with lifting up the liver and pushing the colon down, a good view of the locality of a perforation is obtained.

The closure of the perforated intestine, however, leaves much of the battle for life unfinished. The proper and systematic cleansing of the peritoneum is of the utmost importance. If the extravasation is limited, careful wiping out of the affected portion of the peritoneal cavity, with especial attention to the retrogastric and suprahepatic spaces and to the splenic and renal region, with ample gauze drainage, will in most cases suffice better than the large warm irrigations of sterilized salt solutions, which are, I think, more suitable in extensive or general peritoneal inflammations.

For those who favor multiple incisions and large irrigations, the specific directions of Lennander [26] are of value. He considers in suitable cases and in patients of sufficient vitality that irrigations with water at 40° C. (104° F.) through several incisions the best method of cleansing the peritoneal cavity. One must go carefully and methodically about the solar plexus and the diaphragm; methodically loosening adhesions, irrigating, and then wiping clean with wrung-out gauze. He begins with upper surface of liver, particularly on both sides of suspensory ligament, then passes between liver and stomach to the triangular ligament, then around cardiac portion, then between stomach and spleen, then under diaphragm to left kidney, and along spleen to ligament phrenocolicum. The division of the triangular ligament with a thermocautery has been suggested, so that one might sweep around the left lobe on both sides. He then cleans between the right kidney and liver, kidney and colon, colon and liver, next the lumbar regions and both iliac fossæ, then both sides of the mesentery of the small intestine, and last the pelvis, which is often infected at the beginning of the trouble. A great quantity of hot fluid is of undoubted benefit in the pelvis.

Drains and tampons are intended to remove accumulating fluids and to shut off infected areas. Tubes surrounded by gauze are the best drains. He places sterile gauze on both sides of the suspensory ligament of the liver and between the liver and diaphragm. Drains should be placed in both lumbar regions, the left passing alongside of (better through) the phrenocolic ligament, external to the spleen, to the middle of the diaphragm. The right one passes to the duodenum. The pelvis of men is drained above the symphysis pubis, that of women through the vagina.

My own experience in the surgical treatment of duodenal perforation is confined to one case, which is briefly as follows:

Perforation of duodenal ulcer; laparotomy; suture; death. — Man, age thirty, who had previously symptoms, confusedly detailed, of gastric disturbance, but not of hematemesis, for several months, was seized four days previously with severe epigastric pain, chill, fever, repeated vomiting and great prostration. No blood expectorated or dejected. His abdomen rapidly swelled and became generally tender and painful. On entrance into the New York Hospital, April 30, 1899, nothing could be made out by palpation save that the liver dulness was nearly obliterated. The abdomen was very tympanitic, and no special point of tenderness or dulness was observed. He also had a double hernia. On the right side there was a protrusion of intestine beyond external ring. Pulse 140, temperature 104°. The diagnosis of a general peritonitis from a gastric or duodenal perforating ulcer was made. A large median incision was made, with umbilicus in centre for general exploration. The fingers showed nothing at rings or at cecum, and then on carrying the examination upward a minute sharply defined perforation, one-fourth inch in diameter, was found on the anterior wall of the duodenum, near pylorus, out of which was oozing some brandy and water given just before chloroformization. This was sutured with a double row of Lembert sutures and peritoneal cavity systematically and carefully washed out with sterile salt solution. Returned to ward in bad condition. Salt transfusion, 75 ounces, etc, but the patient succumbed shortly after the operation.

The autopsy showed the perforation to be in the duodenum just below the pyloric termination and in its superior anterior wall. Within the bowel was a

[26] Pagenstecher: Die chirurgische Behandlung des Duodenalgeschwürs. Deutsch. Zeit. f. Chir., August, 1899.

deep ulcer, at bottom of which had occurred the perforation.

LATER EFFECTS OF DUODENAL ULCER AND OPERATION FOR SAME.

There yet remain a few words to be said about the late consequences of a healed duodenal ulcer. The resulting cicatricial contraction may bring about stricture of the duodenum and dilatation of the stomach, and may by traction or primary ulceration damage the bile entrance to the intestine. Several interesting surgical cases have been reported where relief has been afforded by such circumstances. Pagenstecher quotes a case by Lange[27] where a gastro-enterostomy was successfully resorted to for contraction of the duodenum to the hardness and size of the finger, 3 centimetres from the pylorus, with dilatation above of the duodenum and stomach.

Codevilla (also quoted by Pagenstecher) details a more acute case with ulcer and stenosis of the duodenum and dilatation of the stomach. The duodenum was found at the operation markedly stenosed, as in Lange's case, and a gastro-enterostomy was performed, with a successful and permanently good result.

Carle[28] had a similar case in the front part of the duodenum, but the gastro-enterostomy resorted to ended fatally. He also reported another instance where great emaciation and stomach dilatation demanded surgical interference. The first and second parts of the duodenum were found strongly contracted but with atrophic, thin walls. Gastro-enterostomy was employed with success. Death one year later from lung tuberculosis.

Rewidzow[29] also cites a case which is doubtfully placed among these, as the locality of the stenosis following bloody vomiting and gastric disorder for twenty years was shown at the operation to be below the bile papilla, where a stenosis existed. For this a gastro-enterostomy was successfully resorted to.

OPERATIONS FOR DUODENAL PERFORATIONS.

The following list embraces all the reported cases of perforation of the duodenum that have undergone operation up to April, 1900, and have been carefully investigated and epitomized by Dr. E. M. Foote, to whom I am much indebted for this and other help in the preparation of this article:

CASE I. Male, age thirty-five. A heavy drinker; no history of indigestion. For a week or so loss of appetite and indefinite epigastric pain: then sudden acute pain while at work, followed by vomiting. Two days later brought to hospital in collapse. Abdomen distended, dulness in right flank; pulse rapid and feeble; temperature 98.8° F. Laparotomy at end of two days. Acute peritonitis; cause not discovered. Death in a few hours. Autopsy: Perforation anterior wall of duodenum close to pylorus.[30]

CASE II. Male, age thirty-one. Acute attack like intestinal obstruction. Diagnosis: Appendicitis and general peritonitis. Operation, third day. Appendix normal; general peritonitis; perforation not found. Death in a few hours.[31]

CASE III. Male, age twenty-nine. History of abdominal colic. While in usual good health was seized at 5 P. M. with sudden pain, followed by bilious vomiting. Some lumps of feces and gas passed that evening, but absolute constipation thereafter. Next day a purgative only increased the vomiting and pain. Entered hospital on third day, with fecaloid vomiting. On fourth day great distention, tenderness and pain at its maximum in right hypochondrium. Pulse 120, small; dulness in both flanks. Diagnosis: Perforative peritonitis. Operation in about ninety hours. General peritonitis. The hand thrust under the liver broke into a cavity containing two quarts of serous liquid. The intestine was searched in vain for mechanical obstruction, and on account of weakness of patient, the operation was terminated. Death same evening. Autopsy showed a perforation "near the end of the second portion of the duodenum, externally."[32]

CASE IV. Male, age twenty-eight, always well. While drinking tea, had a violent pain in the left side of the abdomen. Next day, a tumor to the right of umbilicus; sour vomit, later becoming fecal; tympanites; constipation, no blood; third day, temperature normal, pulse about 130. Operation in eighty hours (about). Incision to left of umbilicus gave vent to gas and pus; intestine sound; greatly distended; incision of intestine; suture of collapse; drainage. Death in seven hours. Autopsy: Perforation in anterior wall of duodenum; purulent peritonitis.[33]

CASE V. Male, age forty-one, of good previous health except slight indigestion. One year before perforation, an attack of abdominal pain with constipation. While at work was seized with violent pain; gastric vomiting, later becoming fecal; no blood; absolute constipation. In tympanitic stage, when first seen by reporter; respiration thoracic; pulse 120, temperature 99.2°. Diagnosis: Septic peritonitis. Operation, May, 1891. Usual incision; cavity searched; no cause for suppurative peritonitis found; irrigated; drained. Death in ten hours. Autopsy: Perforation in posterior wall of duodenum, 1 inch below pylorus, freely communicating into peritoneal cavity when intestines were lifted.[34]

CASE VI. Female, age twenty, servant. Of constipated habit; otherwise health good. Bowels moved by salts two days before the attack. A sudden attack of pain in the right hypochondrium, passing then to left side, and afterwards becoming general. Vomiting of sour fluid began twelve hours after the attack of pain, and continued. There was tympanites without loss of hepatic dulness. Diagnosis of general peritonitis, cause unknown. Operation in twenty-four hours. A median incision below the umbilicus allowed the escape of inoffensive fluid. A second incision above the umbilicus disclosed the perforation, one-quarter of an inch in diameter, in the posterior aspect of the duodenum, close to the pylorus. Milk was escaping through it. The ulcer was excised and sutured, the abdomen flushed. Death in six hours. General peritonitis.[35]

CASE VII. Male, age twenty-one. Always good health. Sudden pain in the lower abdomen, followed by vomiting and collapse. After eighteen hours laparotomy gave exit to much brownish, acid, non-feculent fluid. There was adhesive peritonitis. The cause of peritonitis was not found. Death in a few hours. Autopsy: A perforation in the anterior wall of the duodenum, about 5 inches from the pylorus, and about 5 inches in diameter; a second non-perforating ulcer of the posterior duodenal wall.[36]

CASE VIII. Male, age fifty-six, brought to the hospital in a condition of tympanites, and having a right inguinal hernia. Laparotomy. The hernia was explored and found to be in good condition, and the incision was prolonged upward 7 inches, giving vent to purulent and fecal fluid. No cause for the peritonitis was found about the cecum or elsewhere. Death in a few hours. On the anterior surface of the duodenum, .5 inch from the pylorus, was a perforated ulcer, .5 x .7 inch. It could easily have been sutured.[37]

CASE IX. Male, age twenty-eight. Of good health until two months before perforation, did not feel quite himself, but no localized symptoms. While ascending an

[27] Pagenstecher: Die chirurgische Behandlung des Duodenalgeschwürs. Deutsch. Zeit. f. Chir., August, 1899.
[28] Loc. cit.
[29] Loc. cit.
[30] Mackenzie (Jones, operator): Lancet, 1888, ii, p. 1,060.
[31] Mackenzie (Croft, operator): Loc. cit.
[32] Boiffin: Cong. fr. de chir., 1892, p. 210.
[33] Lockwood: Medical Society Transactions, 1892, vol. xv, p. 91.
[34] Loc. cit.
[35] Gould: Middlesex Hospital Reports, 1893, p. 168.
[36] Perry and Shaw: Guy's Hospital Reports, 1893, vol. i, p. 261.
[37] Lockwood: Lancet, 1894, ii, p. 964.

omnibus, felt a sudden pain in the abdomen; nausea and vomiting after an emetic had been given; constipation for four days, then a little fecal matter and flatus after an enema. Seventh day, entered hospital; abdomen distended; general tenderness; respiration 28, thoracic; pulse 104, temperature 99.8°. Questioned with reference to duodenal ulcer, could not localize first pain; never any blood by mouth or in stools; only slight indigestion. No evidence of trouble in upper part of abdomen. Diagnosis: Septic peritonitis with pus in pelvis. Operation in one hundred and fifty hours (about). Subumbilical incision; two pints of pus from pelvis; appendix, cecum and small intestine sound; higher search abandoned, as there was less peritonitis in that direction; irrigation, drainage, suture. Death in fifty-four hours. Autopsy: Septic peritonitis in pelvis, and also about duodenum, these areas being separated by a middle zone, relatively free from peritonitis; perforation, .5 inch in diameter, .7 inch from the pylorus, in the upper wall of the duodenum.[38]

CASE X. Male, age sixty-one, with a long history of gastric ulcer, with epigastric pain and vomiting, never of blood. Sudden pain in right hypochondrium; collapse. Diagnosis: Perforation of gastric ulcer. Operation in four hours, fifteen minutes. Perforation in duodenum, anterior wall, .7 inch from pylorus, sutured; thorough washing, drainage. Death in six days. Autopsy: Suture tight: a second ulcer in the back of the duodenum, nonperforating; purulent fluid behind liver and in pelvis.[39]

CASE XI. Male, age twenty-eight. Good health. One hour after a movement of the bowels, while lifting barrel from a dray, felt a sudden pain across the abdomen like a knife; vomiting immediately began and continued. Third day fecal vomiting; pain especially on right side. Pulse rapid, temperature 100.6°, respiration rapid, cold sweat. Diagnosis: Intestinal obstruction. Operation in sixty-two hours. Subumbilical incision gave vent to a large amount of seropus with a fecal odor; cecum, appendix, hernial openings, and intestine in pelvis examined; incision prolonged upward; perforation as "big as a florin," in anterior wall of duodenum, 1 inch from pylorus, pared and closed with six or eight Lembert stitches. Area covered by omentum; irrigation; drainage in pelvis. Death in three hours. No autopsy.[40]

CASE XII. Female, age twenty-seven. For a fortnight had epigastric pain, and constipation for seven or eight days; treated for indigestion. Sudden pain in epigastrium and collapse; vomiting frequently repeated. Thirty hours later slight tympanites, and abdomen uniformly tender; pain most marked in epigastrium; vomiting; respiration rapid and irreguar, pulse 120, temperature 100.6°. Diagnosis: General peritonitis from mechanical obstruction. Operation in thirty hours (about). Subumbilical incision gave vent to fluid and fibrin; intestinal cells congested; no lesion found; incision prolonged upward; gas noticed near gall-bladder; perforation of duodenum .7 inch from pylorus; surrounding induration incised; suture; irrigation; sponging; no drainage. Nothing by mouth for seventeen days; recovery. Two months later symptoms of obstruction; operation on third day; adhesions, which obstructed the ileum a short distance above the cecum, freed. Death from perforation of the wall of the ileum just above the obstruction. The suture of the duodenum was smooth and thin.[41]

CASE XIII. Male, age thirty-five, of alcoholic habit. Upon going to work was attacked by sudden abdominal pain and vomiting; pain and nausea continued, though vomiting ceased. Thirty hours later the patient lay with hollow eyes, alternately extending and drawing up his legs as paroxysms of pain came on. Nothing had passed by anus. There was tympanites except for dulness in right iliac region, where pressure was painful. No tumor could be made out. Temperature 37.9° C. (100° F.) pulse 104 and small. Operation by Brissaud, fifty-one hours after the attack, December 14, 1893. An incision was made over the appendix, giving vent to a great quantity of fecal matter. The appendix was not seen; drainage. Death in a few hours. Autopsy: General peritonitis, and a fusiform collection of pus from the liver to the right iliac region. There was perforation of an ulcer in the anterior wall of the duodenum, just below the pylorus.[42]

CASE XIV. Male. After a debauch the patient was attacked with a sharp pain in the right side of the abdomen. Forty-eight hours later there was general tympanites, fulness over a tumor in the right iliac region and collapse. Operation in fifty-three hours as for appendicitis. From the incision pus and milky fluid escaped in large amounts. Irrigation and drainage. Death. Autopsy showed a perforated duodenal ulcer, the sac about the cecum containing much of the milk and food which had been taken during illness.[43]

CASE XV. Male, age twenty. Slight indigestion. While at the theatre a sudden attack of severe pain in the epigastrium with tenderness; no vomiting; passage of flatus; slight tympanites. Temperature 96°, pulse 100. On the second day greenish vomiting, becoming fecaloid; obstipation; rapidly increasing tympanites; tenderness in the cecal region. Diagnosis of appendicitis. Operation in about sixty hours. Gas without odor, thin, purulent fluid, and lymph in peritoneal cavity. Perforation not found; intestines washed; abdomen closed. Death in twenty-four hours. Perforation anterior aspect of first portion of duodenum.[44]

CASE XVI. Male, age twenty-three. An attack of sudden pain, vomiting and obstipation three years previously. An acute attack of pain and vomiting lasting five days. There were two movements of the bowels in this period. When seen on the sixth day, there was marked tympanites and a very rapid pulse, not much tenderness, and pain in the cecal region. Diagnosis of appendicitis. An incision about one hundred and five hours after attack allowed odorless gas and thin pus to escape. The intestinal coils were covered with lymph, and greatly distended. An incision into the jejunum permitted several pints of fluid to escape. Perforation not found. Abdomen washed and drained. Death in twenty-two hours. Autopsy: There was a small perforation of the anterior wall of the duodenum, one-half inch below the pylorus. At the same distance, there was in the posterior wall the scar of a healed ulcer.[45]

CASE XVII. Male, age twenty-eight, hard drinker. Sudden abdominal pain accompanied by vomiting. Two days later admitted to hospital with general abdominal distention and tenderness, but no loss of liver dulness. Temperature 103°, respiration 20, pulse 120. On third day a liberal median incision revealed a general peritonitis, with a small amount of fluid; cause not found. Rapid irrigation and drainage. Death three days after operation. Autopsy showed a sharply defined ulcer in the the third part of the duodenum, in its posterior wall. The ulcer had for its base the pancreas, whose tissues were necrotic and infiltrated with pus. The suppuration had extended as far as the jejunum, and had there entered the general peritoneal cavity.[46]

CASE XVIII. Male, age thirty-five, a hard drinker, with a history of a similar attack thirteen years previously. For a few days there was a severe abdominal pain accompanied by vomiting. Was admitted to the hospital with very great general tenderness, no distention, and a temperature of 102°. The symptoms improved until the fourth day after admission, and then signs of a rapidly spreading peritonitis were manifest. Diagnosis of appendicitis. Incision made on the fourth day over the appendix showed that organ to be normal. There was a general peritonitis and a large quantity of odorless fluid in the abdomen. Drainage. Death in a few hours. Autopsy showed a perforation in the superior wall of the first portion of the duodenum just beyond the pylorus. The gut

[38] Lockwood: Lancet, 1894, ii, p. 968.
[39] Loc. cit.
[40] Eve: Lancet, 1894, ii, p. 1891.
[41] Dean: Medical Society Transactions, 1894, vol. xvii, p. 305.
[42] Collin: Thèse de Paris, L'Ulcère simple du duodenum.
[43] Bryant: Medical Record, 1895, vol. xlvii, p. 25.
[44] Shield: Lancet, 1895, i, p. 1170.
[45] Loc. cit.
[46] Bolton: Medical Record, 1900, vol. lvii, p. 494.

was adherent to the liver by recent fibrin. There was also the scar of an old healed ulcer.[47]

CASE XIX. Male, age fifty-six. Long history of gastritis and diarrhea and sometimes of blood. Acute attack of pain, four hours after dinner; constant vomiting; collapse. The usual lavage failed to give relief and the water did not return readily. Morphine administered; passage of gas per anum. The next day symptoms disappeared then returned with vigor. Stool after enema. The second day there was again a remission and again a relapse toward night. Dulness and pain most marked in the right iliac fossa. Pulse 112, temperature 38.2°. The third day still iliac tumefaction; marked sepsis; pulse 160. Operation sixty-six hours after attack. Incision over appendix, which was thought to be the origin of the disease, allowed the escape of three pints of reddish virulent fluid with fibrin masses. The peritonitis appeared limited, and it was decided best not to break up the adhesions to find the perforation. Douche and drainage. Death nine hours after operation. Autopsy: An ulcer just below the pylorus occupied two-thirds of the circumference of the duodenum, the anterior wall being not involved. The perforation was on the postero-external surface.[48]

CASE XX. Male, thirty-three. No previous gastric trouble. Sudden colicky pain in right hypochrondrium; collapse; no defecation nor passage of wind. Following day, tympanites; liver dulness absent; temperature 100° F., pulse 122, respiration 38. Operation in twenty-five hours. Incision median line; purulofibrinous peritonitis; gas and fluid from duodenal region; perforation sutured by two rows of stitches; intestines cleaned by moist gauze; no drainage. Recovery after bronchitis; primary union of wound. Patient seen four years later, in good health.[49]

CASE XXI. Male, thirty-five, a hard drinker. Sudden severe abdominal pain, without vomiting. Admitted to the hospital eight hours later with a tense abdominal wall and tenderness over the gall-bladder. The pulse was 90, and there was no fever. Later the temperature rose, distention with obliteration of the liver dulness developed. Diagnosis of appendicitis. Operation in twenty hours. Incision over appendix, which was normal. A well-marked general peritonitis was present, but the patient's condition prevented further search. Death in twenty-four hours. Autopsy showed a perforation of the duodenum in the posterior wall one and one-fourth inches from the pylorus, and a second non-perforating ulcer lower down.[50]

CASE XXII. Male, age fifty-two. Attack of acute pain in epigastrium with obstipation and tympanites six years previously. Recovery in six weeks. More or less pain since. Acute attack of severe pain about pylorus, later extending downward and backward. Absolute obstipation; tympanites slight on second day and increasing; vomiting on third day of moderate character; temperature 100° to 100.5°. Diagnosis of appendicitis. Operation on fourth day. Intestines distended and covered with lymph; no pus. Perforation of duodenum into general peritoneal cavity found and closed. Cavity douched with hot water; gauze drain. Thirst and brownish vomiting; rapidly rising temperature. Death on third day after operation. No autopsy.[51]

CASE XXIII. Male. Sudden epigastric pain while at work, followed by vomiting, tympanites, and loss of liver dulness. Operation in about thirty hours. Perforation in anterior wall of first portion found and sutured. Gas and yellowish fluid in peritoneal cavity. Flushing with hot water; drainage for twenty-four hours. During convalescence return of symptoms necessitated a second laparotomy. Only adhesions of liver to diaphragm. A needle thrust through eighth intercostal space into these drew a drop of pus. A mural abscess formed later which probably caused the above recurrence of symptoms. Recovery.[52]

CASE XXIV. Male, age fifty, who for ten or fifteen years had pain after meals, with vomiting and bloody stools. Last hemorrhage seven months before entrance to hospital. Emaciated and anemic on entrance; stools black; diagnosis of ulcus ventriculi. Two days later sudden pain in right hypochrondrium, with retracted abdomen. Temperature 100°, pulse rate normal. The signs of peritonitis with feelings of distention increasing, laparotomy was performed twelve hours after the attack. A long incision made above umbilicus with cross cut to the left and right; stomach and duodenum examined and fluid like coffee grounds squeezed from its posterior region by pressure, but no perforation could be made out. Duodenum, stomach and colon were sutured together to protect the general peritoneal cavity. Cavity irrigated and wiped and drained at epigastrium and through pelvis. Recovery. Six months later in good condition, as far as duodenal ulcer went. Still had chronic gastritis. Death in eight months from operation for suppurative peritonitis. Autopsy: A new perforation in the posterior wall at the beginning of the second portion of the duodenum.[53]

CASE XXV. Male, age twenty-four years, with no gastric trouble. After a large dinner he felt indisposed for a few minutes. The next morning he rose at six in usual good health and ate his customary breakfast. At the last mouthful of a glass of white wine, he felt a sudden most severe pain and lay down in bed. There was vomiting of food, and afterward incessant vomiting of bile. He described the pain as "not like a general colic, but always in one point here," indicating a spot on the left, midway between the umbilicus and ensiform. A physician diagnosed volvulus, and tried by enemata and massage to relieve pain. In five hours vomiting ceased and the pain subsided somewhat and was referred to the lower abdomen. No fecal matter nor gas passed the anus. There was no tympanites nor difficulty in passing water. Sixteen hours after the attack he was admitted to the hospital. The abdomen was retracted and board-like, the pain was less and vomiting had ceased. There was costal respiration, and appearance of the face indicated severe abdominal trouble, the nose pinched, the eyes sunken, the hands clammy and the patient in a half stupor. Diagnosis was thought to lie between appendicitis and duodenal perforation. Nineteen hours after the attack an incision was made in the median line from the pubis to above the umbilicus. The abdomen contained non-feculent fluid, and there were light adhesions on the intestinal coils. Appendix normal; no intestinal lesion; pelvis normal. Incision prolonged upward and stomach searched; gas found escaping from under liver, and perforation near pylorus on anterior surface of duodenum sutured. Abdomen wiped and drained from site of duodenum. Several saline injections, amounting to 4,200 cubic centimetres in all. Death in twenty hours from peritonitis; suture tight.[54]

CASE XXVI. Male, age twenty-six. Health perfect, never any gastric symptoms. Two hours after his usual light breakfast, while making a slight effort to open a sack, the patient experienced an intense pain in the left side of his abdomen. He was taken almost at once to a hospital. Diagnosis of appendicitis; treatment by ice and opium. Following day a feeble pulse, without fever; abdomen distending; tenderness in left iliac fossa. On second day vomiting set in, becoming bloody and bilious. About fifty-six hours after the attack, Sebileau made an incision as for appendicitis, permitting the escape of non-feculent fluid, like bouillon. The appendix was normal. The patient was already collapsed, and nothing further was done, except to drain with gauze and give a saline injection. Death after incessant vomiting in thirty hours. Autopsy: Abdomen contained fluid. There was general peritonitis; per-

[47] Bolton: Medical Record, 1900, vol. lvii, p. 494.

[48] Festal: Jour. de. Méd. de Bordeaux, 1885, vol. xxv, p. 49.

[49] Herczel, 1895, quoted by Pagenstecher: Deut. Zeit. f. Chir., 1899, vol. liii, p. 557.

[50] Bolton: Medical Record, 1900, vol. lvii, p. 494; also in previous article on perforating ulcer by Weir and Foote, Medical News, 1896.

[51] Warren: Boston Medical and Surgical Journal, 1896, vol. cxxxiv, p. 460.

[52] Dunn: British Medical Journal, 1896, i, p. 846.

[53] Landerer and Glucksman: Mitt. Grenzgebiet. Med. and Chir., 1896, vol. 1, pp. 168 and 738.

[54] Banzet and Lardennois: Bull. Soc. Anat., Paris, 1897, vol. lxxii, p. 479.

foration in the anterior wall of the duodenum 1 centimetre from the pylorus.[55]

CASE XXVII. Male. Attack of sudden pain like lead colic. Incision from the ensiform downward. There was food under the liver, and a perforation was found in the first part of the duodenum. Suture. Death in twelve hours.[56]

CASE XXVIII. Male, policeman, of alcoholic habit and history of gastric attack. While on duty the patient had a sudden attack of pain which made him writhe in agony. His bowels had moved a short time before. When seen soon after the abdomen was retracted, as hard as a board, excessively tender, especially under the ribs and in the right flank. Diagnosis of hepatic colic. Compresses were applied and morphine administered. The following day he felt better. An injection resulted in a large stool. Milk and vichy were administered. There was no fever and not much pain, but the abdomen was still retracted. Thirty hours after the attack vomiting set in, soon becoming bilious. The abdomen swelled and the patient was taken to a hospital. Diagnosis: Appendicitis, intestinal obstruction or volvulus. Abdomen opened forty-eight hours after the attack. Nothing but general peritonitis discovered. Dieulafoy, operator. Death in one hour. Autopsy showed a perforation of the duodenum in the anterior wall just below the pylorus.[57]

CASE XXIX. Female, age twenty-five, servant, giving a history of gastric trouble with vomiting, but never of blood. An increase of gastric pain, with general tenderness and abdominal swelling, was followed four days later by marked distention. Palpation showed the greatest tenderness to be in the cecal region. There was no fever. A needle thrust into the right iliac fossa brought out gas and an odorless fluid, containing flakes of fibrin. An incision was made over the appendix, which was congested. There was general peritonitis. Death in four days from the operation. Autopsy showed pus in the pelvis and about duodenum, in the lower wall of which, close to the pylorus, there was a perforated ulcer. A second ulcer was situated in the posterior wall.[58]

CASE XXX. Female, thirty-four, servant, with a history of gastric troubles for twenty years, with frequent vomiting of blood; last attack one week before admission to the hospital, the vomiting being followed by bloody stools. Pulse 84, regular, strong; rectal temperature 98.6°. Maximum pain midway between ensiform and umbilicus to the right of the median line. Ice bag on abdomen, nothing but ice by mouth. Next day pain involved the whole right side; was relieved by morphine, but recurred with vomiting, a small pulse of 106, and cold sweat. More morphine was given. Two hours later the pulse was 130, there was tenderness all over the abdomen, and edema in the epigastrium. Diagnosis: Gastric ulcer. Laparotomy two days after admission to the hospital, thought by the operator to be "at least fifteen hours after perforation" through the left rectus above the umbilicus; gas and fluid escaped; no adhesions; general peritonitis. Perforation at pylorus, thought to be in the lesser curvature, sutured. Abundant irrigation; gauze drainage; 700 cubic centimetres saline injected. Death twenty-four hours after operation. Autopsy: Perforation in the superior wall of the duodenum near the pylorus. The suture was perfect.[59]

CASE XXXI. Female, age fifty-four years, with history of indigestion, no bloody vomiting. A sudden attack of pain and vomiting, not of blood, followed by a large bloody stool and several small ones of a tarry character. Was followed eighteen days later by a second attack. There was tenderness and resistance to the right of the median line above the umbilicus; no fever. Laxatives and enemata relieved the abdomen of gas and fecal matter and the area of resistance became a well-defined tumor. Nine days after the last attack an incision was made through the right rectus muscle, and in separating the abdominal wall from the viscera several small abscesses were opened, and through one of these gas and gastric contents escaped. Perforation readily found and closed. It was at the pylorus and thought to be in the stomach. The gall-bladder was opened and eight stones removed. Most of the omentum excised. Iodoform gauze drains were inserted. Death in five weeks. Autopsy showed that the abdominal condition was perfect. Death was due to pulmonary thrombosis infarction, from saphenous thrombosis. The sutured ulcer had healed. Two others in the duodenum had not perforated.[60]

CASE XXXII. Male, age thirty-seven, shoemaker, with nausea and vomiting and indigestion, more or less for years. One morning he awoke feeling perfectly well. On sitting up in bed he was seized by a terrible pain in the umbilicus and to the right side lasting several hours, and followed by vomiting. Enemata resulted in several small stools. The next day he was taken twenty-five miles in a sleigh to the hospital, where he arrived with respiration 26°, pulse 140, temperature 102.5°, but free from pain while at rest; tenderness in left iliac fossa, and in the right hypochondrium, and over right rectus muscle. Stomach and bowels washed out. Diagnosis of duodenal ulcer or appendicitis. Sixty hours after the attack an incision was made in the median line, mostly below the umbilicus. Fluid and gas and fibrin escaping mostly from above, the cut was extended upward and the right rectus was cut across. A perforation into which the index finger passed was found in the anterior superior wall of the duodenum near the pylorus. It was sutured and the cavity washed out with water at a temperature of about 45° C., wiped out and drained in both loins as well as about duodenum and liver. Compresses wrung out of hot saline were placed in the wound which was left open. The pulse and temperature gradually rose, and in spite of 1,150 cubic centimetres of salt solution injected into a vein, the patient died in twenty-six hours after operation. Autopsy: Fibrous peritonitis without fluid. The suture was firm. There was an abscess between the stomach and colon.[61]

CASE XXXIII. Male, age forty-six. While lifting a heavy weight, he felt something snap, and immediately afterward there was intense pain (locality not given), which soon spread to the whole abdomen. Four days later he entered the hospital, not having passed gas or fecal matter per anum. There was no localized pain, but pressure was everywhere painful; no tumor nor fluctuation. The patient had not vomited, but had a hiccough; pulse irregular, 110; temperature 99°. A diagnosis of intestinal obstruction was made and castor oil was given in small doses every hour. The next day there was great prostration and choreic movements. Five days after the attack the abdomen was opened by a median incision from pubis to ensiform, with a cross cut through the right rectus muscle. There was general peritonitis with pus and membranes all over, but especially in the pelvis. At the pylorus on the superior surface was a large perforation, which was sewed with difficulty, and the abdomen flushed and closed. Death two hours after the operation.[62]

CASE XXXIV. Female, age thirty, with a history of indigestion and some epigastric pains. While eating breakfast she was seized with a terrible pain in the epigastrium and left the restaurant for a seat in the park close by. She was taken at once to a hospital. In six hours the pain was general and vomiting set in. The following morning she was worse, without stools or passage of gas, and scanty urine. The condition grew rapidly worse, with rapid pulse, subnormal temperature, tympanites and loss of liver dulness. A diagnosis of perforation, probably of the stomach, was followed by operation, twenty-eight hours after the attack. Incision above the umbilicus gave escape to gas and a quart of bile and purulent fluid. Stomach and biliary tract normal, and perforation found in the right side of the second portion of the duodenum. Open-

[55] Lardennois: Bull. Soc. Anat., Paris, 1897, vol. lxxii, p. 46.
[56] Soligeux: Bull. Soc. Anat., Paris, 1897, vol. lxii, p. 72.
[57] Beausse: Jour. de Méd. de Paris, 1897, vol. ix, p. 146.
[58] Lennander: Mitt. Grenzgeb. Med. und Chir., 1898, vol. iv.
[59] Loc. cit.
[60] Lennander: Mitt. Grenzgeb. Med. und Chir., 1898, vol. iv.
[61] Loc. cit.
[62] Schwarz (Rochard, operator): Bull. et Mem. de la Soc. de Chir., 1896, p. 3.

ing sutured and abdomen closed over a rubber drain to duodenum. Death in fourteen hours. Autopsy: Perforation a little below and to the right of the opening of the common duct explained why the bile flowed so freely into the abdomen. The closure was perfect. There was a second ulcer a little below the first which had not perforated.[62]

CASE XXXV. Male, age twenty-three, a soldier, with a history of numerous sprees before he entered the army. During a march he took a cup of coffee, and almost immediately he was overcome by pain in the epigastrium and right hypochondrium, streaming into the right shoulder. He was nauseated but did not vomit. There was tenderness and muscular contraction on pressure, especially on the right side. An enema produced a normal dejection. The pain spread over the whole upper part of the abdomen, accompanied with a certain amount of distention, constant vomiting of greenish fluid and a partial disappearance of the liver dulness. Incision above the umbilicus forty-eight hours after the attack. General peritonitis. Intestine overhauled, then liver examined. Bubbling at its base led to the discovery of the duodenal perforation in the posterosuperior wall of the first portion of the duodenum. The right rectus was divided to give room for suturing, but the stitches would not hold, and the perforation, of a size to admit the little finger, was walled off from the peritoneal cavity by omentum sutured above and below it. Death in thirty-six hours of general peritonitis. There were no other lesions found at autopsy.[64]

CASE XXXVI. Male, age twenty-two. Always perfectly healthy. An acute attack of intense pain and vomiting three hours after supper; pain referred to the umbilicus and right side. On the following morning, temperature was 101°, pulse 120, respiration 42; moderate tympanites; lower edge of liver dulness 2 inches above the costal margin; tenderness most marked in the epigastrium and on the right side of abdomen. Diagnosis of peritonitis, probably due to appendicitis. Operation fifteen hours after the onset of attack. Incision over appendix. General seropurulent peritonitis. Appendix appeared normal but was excised. A second incision above umbilicus revealed after careful search a one-fourth-inch opening in the anterior wall of the first portion of the duodenum, close to the hepatic ligament. It was in the centre of an indurated area, and on account of its deep situation, no excision was made. Suture, and cleansing of the peritoneum with gauze. Closure of abdomen over iodoform gauze drain. Recovery with severe illness.[65]

CASE XXXVII. Male, age thirty-eight, with history of attacks of intense pain in the epigastrium three or four hours after meals, without nausea or vomiting. While in usual good health, suffered an acute attack of violent pain in epigastrium with collapse. He recovered somewhat and then grew gradually worse, with vomiting on the third day; no movement of the bowels for a week before the attack. On the third day temperature 100°, pulse 99, respiration 30; face drawn; abdomen distended with gas; dull in flanks; liver dulness absent. Operation about seventy-two hours after onset of acute symptoms. Through an incision in the median line, much gas and thin greenish-yellow purulent fluid escaped, with flakes of lymph; appendix normal. A search over the intestine showed the perforation to be in the anterior wall of the duodenum near the pylorus. It was sutured and the abdomen swabbed out. The operation lasted two and one-half hours. Afterwards one quart of saline solution was injected into the basilic vein. Death in eight hours. The peritoneal cavity was dry, except six ounces of pus between the diaphragm and liver. The suture was tight and adhesions had already formed around it.[66]

CASE XXXVIII. Male, age thirty, with a history of dyspepsia. While stooping to draw off his boots, the patient suffered a severe pain in his stomach which stretched him out. The following day an enema was without result. The abdomen was swollen and painful, the pain being all about the umbilicus, the urine scanty and the pulse 120. About twenty-seven hours after the accident an incision was made in the median line at the umbilicus. The intestinal coils were distended and red. A mass of fecal matter seemed to clog the lumen, and was pushed along for a couple of yards. There was a suspicious yellow fluid in the peritoneal cavity, and pus in the pelvis. The appendix was normal. The abdomen was flushed with boric-acid solution and closed. The vomiting ceased, gas and a great quantity of feces passed and the abdomen became soft. Five days later the patient was attacked with dyspnea and double pneumonia developed. Death in nine days after the operation. There were numerous pus foci in the abdomen, and a perforation of the duodenum partly shut in by adhesions.[67]

CASE XXXIX. Female, age seventeen, and fairly healthy; had rarely suffered from indigestion. One week before perforation occurred there had been indefinite pain in the abdomen for which she consulted a physician, who feared a beginning attack of appendicitis. About three hours after eating a hearty supper, she was seized with a violent pain above the umbilicus. Prostration followed, with rapid pulse, subnormal temperature, vomiting and rigid abdominal muscles. Infusion of saline solution and stimulants failing to improve the patient's condition, operation was performed twelve hours after the beginning of the attack. Incision as for appendicitis; appendix and pelvic organs normal, as was the small intestine. In the upper part of the abdomen there was a good deal of lymph and greenish fluid. The perforation of the duodenum was in the anterior wall of its third portion and was about the size of a goose quill, and surrounded for about an inch an indurated area. Fluid was freely escaping. Direct sutures would not hold, so a purse string was inserted, and afterward other peritoneal sutures. In this way the opening was firmly closed. Lymph and fluid were wiped away and the abdomen flushed with a great quantity of hot saline solution. Numerous gauze drains were inserted. Convalescence was slow, as it was a long time before the suppurating tracts, where the drains had lain for a week, had healed, but the patient ultimately recovered completely.[68]

CASE XL. Male, age thirty. Sudden pain in abdomen, followed by shock and toxic symptoms. Operation thirty-six hours later as for appendicitis. Perforation found in first portion of duodenum. No blood nor food in peritoneal cavity. Death in a few hours.[69]

CASE XLI. Male, age forty. Seized with pain while at work, followed by shock and toxic symptoms and great tympanites. Operation in twenty hours. Perforation found in first portion of duodenum, no blood nor food having escaped. Death in a few hours.[70]

CASE XLII. Male, age thirty-eight. Supposed pulmonary abscess was opened and a large quantity of pus escaped. Two weeks later an abscess formed in groin and was opened. Later the abdomen was opened for appendicitis and a quart of creamy pus containing streptococci escaped. Death followed. Autopsy showed two ulcers near pyloric ring, one in the duodenum, the base of which had healed over, and one in the stomach — perforated. There were numerous pus pockets in the abdomen, one in the head of the pancreas being the original one apparently.[71]

CASE XLIII. Male, age twenty-nine. Alcoholic. Three years morning vomiting. Following a long spree he felt umbilical pain and vomited and had a chill. The next day the abdomen was moderately distended and rigid. Diagnosis of general peritonitis from appendicitis. Operation one to two days after attack. About one quart of fluid and fibrin escaped. Appendix amputated. Death in thirty hours. Autopsy revealed perforation in superior anterior surface of duodenum near pylorus.[72]

[62] Schwartz (Guinard, operator). Bull. et Mem. de la Soc. de Chir., 1898, p. 3.
[64] Schwartz (Sieur, operator): Loc. cit.
[65] Wanach: Arch. f. klin. Chir., 1894, vol. lvi, p. 425.
[66] Whipple: British Medical Journal, 1898, vol. ii, p. 1429.
[67] Routier: Bull. et Mem. de la Soc. de Chir., 1899, p. 17.
[68] Taylor: North Carolina Medical Journal, 1899, vol. xliii, p. 109.
[69] Erdmann: Medical Record, 1899, vol. lv, p. 477.
[70] Loc. cit.
[71] Brooks: Medical Record, 1899, vol. lvi, p. 943.
[72] Brooks (Le Boutillier, operator): Loc. cit., p. 944.

Case XLIV. Male, age thirty. History of gastric disturbance; no hematemesis. Sudden severe epigastric pain, with chill, fever and repeated vomiting and great prostration. No blood by mouth or rectum. Gradually increasing distention and tenderness. Four days later, April 30, 1900, he entered the New York Hospital, the abdomen generally swelled, but not presenting any special points of tenderness or dulness. Liver dulness absent. Patient had a double hernia, and in the right hernial sac intestine was to be felt. Temperature 104°, pulse 140. Median incision with umbilicus in centre. Nothing abnormal found at the internal rings or about the cecum. From a one-fourth-inch perforation in the anterosuperior wall of the duodenum close to the pylorus, brandy and water was found escaping. Closed with a double row of sutures; thorough washing of intestines and cavity; saline transfusion of 75 ounces, etc. Death in a few hours. Operator, Weir. Case not previously reported.

Case XLV. Male, age twenty-seven, always healthy, but a steady drinker. Had colicky pain for four days, above umbilicus on the right side. Bowels moved daily and he kept on working. Then sudden severe pain 3 inches above the navel, and a little to right of median line; chill; no nausea. Nine hours later pulse 80, respiration 20, temperature 101.5°. March 28, 1899, abdomen opened ten hours after sudden pain, along right semilunar line above and below umbilicus; bile-stained fluid escaped; appendix examined as a matter of precaution and found normal. Incision extended upward to ribs. Perforation of duodenum, anterior surface, descending portion, big enough to admit 26 French sound, through which bile and intestinal contents were escaping. All organs in vicinity showed signs of irritation and so were washed with saline while opening was closed by pad. Suture of perforation; repeated flushing of peritoneal cavity without evisceration and wiping with dry gauze; gauze drain to ulcer; wound elsewhere closed. No shock. Patient fed by rectum for forty-eight hours. Temperature following day 101° F., and infection of skin stitches, which were removed. Recovery otherwise uneventful and perfect.[73]

Case XLVI. Female, age twenty-five. Sudden attack of umbilical pain, rigor and slight vomiting. On following day pain at pylorus and blood passed per rectum. Temperature then and later 101° F. or less. Attack gradually subsided, but in two weeks a similar slighter attack occurred. Later a fluctuating tumor in region of gall-bladder, gradually increasing in size until it occupied the whole right upper quadrant of abdomen. It was crossed by resonant colon; elsewhere dull on percussion. Diagnosis: Hydronephrosis. Through lumbar incision a quart or more of clear amber odorless fluid drawn off. Cyst reached from liver to iliac crest, and backward to spine. Kidney not felt. Stuffed with gauze, which next day was soaked with sour fluid. On third day food noticed in dressing. Patient developed acute bronchitis and died on fifth day. Autopsy showed duodenal perforation 3.5 inches from pylorus forming this retroperitoneal cyst below right kidney and reaching behind duodenum as far as pancreas.[74]

Case XLVII. No history given. Incision from ensiform cartilage to pubis. Ulcer found at back of the duodenum and with difficulty stitched. Patient collapsed and abdominal wound hastily closed. Death from hemorrhage from a vessel in the abdominal wound.[75]

Case XLVIII. Male. Patient neurasthenic and little attention was paid to his statement that he had great pain. Operation on the fifth day, when liver dulness was entirely obscured. Gas had escaped from the perforation, but no fecal matter, and the ulcer was therefore sutured and the abdominal wound closed without drainage. Death on the third day from infection leading from the site of perforation to the pelvis. Suture firm. The operator thought that pelvic drainage might have saved this patient.[76]

Case XLIX. Male, age fifty-two. Epigastric pain of three days' duration was followed by violent exacerbation. No vomiting. Six hours later the abdomen was tense, rigid, almost motionless, with complete absence of liver dulness in the line of the nipples. A diagnosis of perforated duodenal ulcer was made and operation decided upon. Ten hours after the attack an incision was made through the right rectus and a clean-cut perforation was found at the junction of the first and second portions of the duodenum. There was intestinal injection but no well-marked peritonitis. The perforation was closed with two rows of sutures, the intestines were brought out and washed with sterile water. A gauze slip was passed to the site of ulceration and the cavity of the abdomen was otherwise closed. Recovery uneventful. The gauze plug was removed on the second day, and the bowels moved on the third day.[77]

Case L. Male, age twenty. Seven months previously an attack of epigastric pain and vomiting lasting two weeks. Sudden severe pain in the right side of the abdomen, accompanied by vomiting. A few hours later the tenderness was greatest over the appendix. Temperature 102°, respiration 48, pulse 118. Diagnosis of appendicitis. Twenty hours after the attack an incision over the appendix allowed the escape of a quantity of odorless gas and fluid. On account of feeble condition further operative attempt abandoned. Death in twenty-four hours. Autopsy showed a perforation in the duodenum, anterior wall, just beyond the pylorus.[78]

Case LI. Male, age forty-five, a moderate drinker. Four years previously a similar attack. While in perfect health was seized with severe pain in the right side of the abdomen, referred to the iliac region. A few hours later the abdominal wall was tense, without distention or loss of liver dulness; tenderness over the appendix; temperature 100°, respiration 32, pulse 104. Diagnosis of appendicitis. Thirty-two hours after the attack an incision over the appendix evacuated considerable turbid serum. The appendix was normal. The peritonitis was most marked on the right side, and was followed up the colon to the hepatic region, but no cause for it could be found. The whole abdomen was flushed and drains were placed in the duodenal region and in the pelvis. Death in seven days. Autopsy showed a general exudative peritonitis, without free fluid. In the duodenum, anterior wall, just below the pylorus, were a perforated ulcer and the scar of a healed one.[79]

[73] Johnson: American Surgery, 1899, vol. xxx, p. 634.
[74] Wright and Bury: Lancet, 1899, ii, p. 215.
[75] Elliot: Boston Medical and Surgical Journal, 1900, vol. cxlii, p. 41.
[76] Loc. cit., p. 42.
[77] Perkins and Wallace: Lancet, 1900, i, p. 458.
[78] Bolton: Medical Record, 1900, vol. lvii, p. 404.
[79] Loc. cit.

Original Article.

THE IDEAL RATION FOR AN ARMY IN THE TROPICS.*

BY EDWARD L. MUNSON, M.A., M.D.,
Captain and Assistant Surgeon, United States Army, Washington Barracks, D. C.

Since the amount and character of food required for the preservation of health and vigor is influenced not only by climate but also, to a certain degree, by body weight, age, race, custom of living and other varying factors, it will be premised at the outset that the army above referred to is composed only of white troops, preferably drawn from the same regions and recruited under the same physical requirements as are the military forces of the United States. It is fur-

* This essay was unanimously awarded the prize of $100, offered by Dr. Louis L. Seaman, late Major and Surgeon First United States Volunteer Engineers, through the Military Service Institution, Governor's Island, N. Y., for the best discussion of the above subject. The judges were Col. John F. Weston, Acting Commissary-General, U. S. Army, Lieut.-Col. Charles Smart, Deputy Surgeon-General, U. S. Army, and Lieut.-Col. William E. Dougherty, Seventh U. S. Infantry. The competition was open to all commissioned officers of the army, navy and volunteer forces.

ther assumed that the present United States Army ration, as established by law, will form the most satisfactory basis for the supply of food to troops of the above character, under any conditions of climate, since it contains only such nutrient articles as are commonly included in the diet of the civil classes from which the American soldier is ordinarily drawn, and to the ready assimilation of which his system is accustomed through the influence of heredity as well as personal habit. There are, then, two questions to be answered: Is the present army ration, considered as a whole, adapted to the needs of the United States soldier serving in the tropics? And if not, why not? These points having been determined, the remedy for existing defect can readily be deduced.

To the first question common experience returns an unqualified negative, best embodied in the words of the Court of Inquiry appointed to investigate the character of the food issued to troops during the war with Spain. This Court reported as follows: "As to the effects of the food supply, having regard to sufficiency and quality, it seems to be clearly established that the army ration as supplied, without modification, to the troops serving in the West Indies, was by no means well adapted for use in a tropical climate. If this be true, the unfitness of the ration should have manifested itself by its failure to keep the troops, who subsisted upon it, in the best possible condition for service in hot climates. This, in the opinion of the Court, is fully established in evidence."

The formulation of a reply to the second question involves, as a fundamental principle, a brief consideration of the physiology of hot climates — the determination of such alterations of body function as may result from the climatic and environmental conditions obtaining in the tropics. It implies, also, the appreciation and comparison of the dietaries ordinarily used, under varying conditions of climate, by human beings of the military class in civil life; a general review of all facts based upon practical experience with the phenomena of nutrition, especially in low latitudes, and, finally, a study of the existing army ration with reference to its modification for the tropics according to such principles as may appear to have been fairly established.

I. THE PHYSIOLOGY OF HOT CLIMATES.

The body temperature in the tropics is appreciably elevated above the normal in new arrivals. Rattray,[1] in his investigations upon this point, obtained the following results:

Hour of day.	Temperate climate, near England. Temperature 62°F. Average of 10 days.	Tropics generally. Average of 51 days.	Equator, temperature 84°F. Average of 7 days.
9 A. M.	98.1°	98.51°	98.5°
3 P. M.	98.3°	99.00°	99.5°
9 P. M.	98.5°	98.47°	99.1°
Average	98.3°	98.66°	99.02°

Maurel[2] found an increase of body heat in individuals recently arrived in the West Indies ranging from .5° to .9° F., and Jousset[3] noted an average increase among the whites in Senegal of even greater degree. Fayrer[4] states that among European residents in Bengal the bodily temperature is .41° F. higher than the average of healthy persons in England. Internal heat in temperate climates is readily lost by radiation and contact with the external air, by the heating of inspired air, by exhalation of moisture in the breath and by cutaneous evaporation. In the tropics the difference between internal and external temperature is always very slight, and it may frequently happen that for considerable periods the heat of the surrounding atmosphere may even exceed that of the body. Further, the high degree of humidity ordinarily present in the tropics opposes evaporation of moisture. It therefore happens, through these changed conditions, that, instead of dissipating heat, the vital forces must frequently neutralize heat reception in order to keep the bodily temperature down to normal. This produces an alteration in metabolism and throws additional work on the kidneys and liver; for an excess of nutritive material, which in temperate climates would be oxidized in the production of heat, requires here to be merely excreted.

A loss of body weight occurs in hot countries, and the same is commonly observed in summer in the temperate zone. Rattray[5] noted that with an average temperature of 80° F. the loss of weight among a body of marines averaged eleven pounds per man during the period of one year. The decrease was greater when salt provisions were given and the air loaded with moisture, the loss of weight under hard labor being greater and more rapid. In the dry season 44 per cent. and in the wet season 76 per cent. of the individuals observed lost in weight. Rattray concluded that this effect was due to the destructive influence of prolonged heat upon the cellular elements of the organism, together with imperfect oxygenation. Adipose tissue, as a non-conductor, is undoubtedly potent in conserving internal heat and diminishing the effect of outside low temperature. In cold regions the proportion of fat in the organism is much greater than in warm climates, where the storing up of fats in human tissue is rare, and even the artificial fattening of animals is accomplished with the greatest difficulty. In cold climates, on the contrary, considerable deposition of fatty material is the rule. The animal flesh of the far north, as seal, bear and walrus meat, is notoriously rich in fats; while the chief protection of the whale against the cold of the polar seas is the thick layer of blubber in which the muscular structure is enveloped. Viewed from this standpoint, the decrease of body fat which occurs in the tropics may be looked upon as one of the most important processes by which the adaptation of the organism to changed conditions of temperature is accomplished. The discomfort of the obese during warm weather is proverbial, and hence loss of weight, provided the decrease is strictly limited to the adipose tissue alone, may be considered as wholly beneficial. It is obvious that any excess of foods, which in temperate climates is largely converted into systemic fat, cannot be devoted to this purpose in the tropics with either facility or advantage.

Tropical heat directly lowers the pulse rate; Rattray[1] finding that the average rate of cardiac action in the tropics was less by two and one-half beats per minute than in the temperate zone. This reduction of the pulse rate is doubtless related to the diminished respiratory function; and further observation proves what the latter fact suggests, namely, that in the tropics the pulse is diminished not only in frequency but in force. The low arterial tension always noted in

hot climates is a direct result of loss of fluid through increased perspiration favored by a relaxed state of the capillaries. The following results were obtained by him:

Hour.	Number of Observations.	Tropics.				Temperate zone.
		Lowest.	Highest.	Range.	Average.	Average.
9 A. M.	53	68	113	45	86.4	91.7
3 P. M.	53	68	106	42	89.8	88.1
9 P. M.	49	73	110	37	87.5	90.5
Average.					87.5	90.1

The first effect of tropical heat is to increase the respiratory capacity. This has been shown by Rattray[1] by means of the spirometer; his observations being subsequently confirmed by others. The results obtained by this investigator are as follows:

	Temperate Zone near England, at Sea. June. Thermometer 69° F. Hygrometer 2.5° F.	Tropics, at Sea. July. Thermometer 78° F. Hygrometer 4° F.	Tropics, at Sea. August. Thermometer 81° F. Hygrometer 4° F.	Temperate Zone near England, at Sea. September. Thermometer 65° F. Hygrometer 1.5° F.	Temperate Zone. England. February. Thermometer 42° F. Hygrometer 3° F.
Average capacity of chest in cubic inches.	256.083	280.75	287.416	260.25	253.727

The average gain in lung capacity noted by him for the tropics was 31.4163 cubic inches; the percentage of gain, as compared with the temperate zone, amounting to 12.24 per cent. Cullimore,[6] however, states that this increase in vital capacity does not continue, and that, after a period ranging from six months to two years, it falls below the level for Europe.

Closely allied to the foregoing is the influence of tropical climate on the frequency of respiration. In heated air chambers the rate of respiration becomes less in man, and Vierordt and Ludwig[7] long since found that the same results were obtained in animals subjected to great heat. Rattray's[1] observations as to the comparative frequency of respirations in hot and cool climates are as follows:

		Average Temperature (Shade) F.	Highest Number of Respirations.	Lowest Number of Respirations.	Average Number of Respirations.
Temperate Zone.	England in summer. (June.)	62°	18	13.5	15.68
	England in winter. (February.)	42.25°	17.5	15	16.5
Tropics.	Equatorial doldrums, outward voyage.	78.74°	14.5	11	12.74
	Equatorial doldrums, return voyage.	78.6°	15	12	13.74

Not only is the respiratory action markedly decreased in hot climates, but the greater quantity of air inspired in the tropics does not make up for the diminished number of respirations in supplying the same amount of oxygen to the blood as in cold climates. Using the above data, Rattray[1] calculated the deficiency in the oxygen inspired in the tropics as follows:

Climate.	Cubic inches in each Inspiration.	Number of Inspirations per minute.	Cubic inches respired.
England.	15	17	255
Tropics.	16.836	14	235,704

Difference in favor of a temperate climate, 19,296 cubic inches, or 7.567 per cent.

"This decrease of 7.567 per cent. in the quantity of air respired daily diminishes the quantity of carbon which the lungs in ordinary circumstances can throw off in the tropics by .7567 ounces; 10 ounces being taken as the average amount thrown off in temperate climates will give 9.243 ounces as the amount for the tropics. But as tropical air contains less oxygen for a given bulk than air of colder latitudes, through the expansion of gases by heat, the decarbonizing capabilities of the lungs in tropical latitudes will evidently be still further curtailed and the amount of carbon they can throw off considerably decreased. Air increases by $\frac{1}{480}$ its volume for every degree of heat, and the difference between the temperatures in which these experiments were carried on being 18° F. (65° and 83° F.), if we reduce the amount inspired in the tropics by $\frac{1}{480}$ part, this will give its equivalent bulk in the temperate zone, thus:

$$\frac{235.704}{1+\frac{1}{480}\times 18} = \frac{255.704}{1.0375} = 227.1846 \text{ cubic inches,}$$

which is equal to a decrease of 8.5194 cubic inches, or 3.614 per cent. Then 255 minus 227.1846 cubic inches gives 27.8154 cubic inches per minute, or 1,668.924 cubic inches per hour, or 40,054.176 cubic inches per day = 10.907 per cent. as the grand total difference in favor of a temperate climate, after deducting the real increase in volume and correcting for expansion of heat. By again reducing the 9.243 ounces of carbon by 3.614 per cent., or .33409 ounces, we get 8.909 ounces as the total amount which the lungs throw off in the tropics, the difference between the tropical and extra-tropical qualities being 1.1028 ounces."

The explanation of the variation in respiratory capacity noted above would appear to be due to the fact that there is no actual increase for the tropics in the size of the chest and enclosed lungs, but only an alteration in the relative proportion of blood and air contained in the latter. The bulk of the lungs remaining the same in the tropics as in cold latitudes, or being, as shown by Parkes,[8] even somewhat diminished from their comparative abeyance as excreting and heat-generating organs, the blood, diverted to the functionally excited and congested skin and liver, permits the ingress of a larger quantity of air into the pulmonary air cells.

With the diminution in arterial tension there is, also, at each respiratory movement, less blood forced through the lungs than in the temperate climate, and this diminution necessarily implies a lessened value to the respiratory act. Further, the air in the tropics is rarefied, and pressure, which rules the conditions of pulmonary endosmosis, is diminished; hence it may be that the air reaches the pulmonary alveoles under pressure insufficient to properly force it into the pulmonary capillaries. The deficiency of oxygen taken

into the organism in the tropics, as influenced by the above factors, may therefore be considered to be made up as follows:

Lessened value of respiratory act	7.5 per cent.
Rarefaction of air	3.6 "
Diminished cardiac action	3.0 "
Deficient air pressure	2.2 "
Total	16.3 "

It is undoubtedly true that less oxygen is required in the high temperatures of the tropics. Through decreased exertion a smaller amount is required for the metamorphosis of waste particles, and, where lessened necessity and desire for food diminish the ingesta, less is required for direct combination with the nutritive elements in the production of energy. It is probable, however, that there is a somewhat increased absorption of oxygen in hot climates by the functionally excited skin, which may, to a slight degree, act vicariously as a respiratory organ and so lessen the amount required by the lungs. Furthermore, the skin is aided in relieving the lungs in the decarbonizing process by the functionally excited liver and kidneys, which eliminate carbon in forms which do not require much oxygen for their formation, namely, as bile and uric acid.

The amount of sweat is greatly increased. Fonssagrives[9] states that it is double the average amount secreted in Europe, often amounting to four or five pounds in the twenty-four hours. The amount of solids eliminated, however, is not proportionately increased. In addition, the secretion of sebum is more abundant than in temperate climates. In this connection Hill[10] says: "The skin of the negro is a much more active organ of depuration than that of the white. It not merely exhales a larger proportion of aqueous fluid and carbonic acid from the blood, but it also elaborates a more unctuous secretion, which, by its abundance and sensible properties, evidently possesses a considerable influence in counteracting the heating effects of the sun's rays upon the body and in carrying off the superabundant caloric."

As a result of increased perspiration there is a diminished excretion of urine, the reduction amounting to about one-third of the usual amount. Mourson[11] states that the diminution in the output of urea usually amounts to about 10 or 15 per cent. According to Eijkman,[12] Europeans who had been in Java from two to six months excreted 14.8 grammes of nitrogen daily, or .226 gramme per kilogramme of body weight, while those who had lived in the tropics one and one-half to fifteen years excreted 12.802 grammes of nitrogen daily, or .193 gramme per kilogramme of body weight. Such decrease in eliminatory function on the part of the kidneys, according to Moore,[13] is followed by increased secretory action of the liver, whereby some effete matter is passed into the intestines with the bile. But increased liver action is accompanied by congestion, and congestion frequently by hepatic deposit and degeneration, with impairment of function.

Through the loss of fluid resulting from increased perspiration, there is a diminution in the secretion of saliva, mucus, gastric and pancreatic juices and bile. As a consequence, also, there is dryness of the throat and fauces and exaggeration of thirst, weakness of appetite, impaired digestion, gastric fulness after eating and habitual constipation; these, according to Nielly,[14] being the digestive phenomena constantly observed in the tropics.

(To be continued.)

THE BOSTON

Medical and Surgical Journal.

THURSDAY, MAY 3, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.

TYPHOID FEVER AND THE WATER SUPPLY OF PARIS.

A RECENT number of the *Journal d' Hygiène* (April 12th) contains a statement relative to the recent increase of typhoid fever in Paris which is worthy of more than a passing notice. The circumstances call to mind the conditions which prevailed at Chicago a few months previous to the opening of the Columbian Exposition of 1893, when typhoid fever had increased to such an extent as to create grave apprehensions as to the opening of the Exposition. The cause was attributed to the serious pollution of the city water supply. One of the results of the investigation was the immediate introduction of spring water from Wisconsin, by a pipe line leading to the Exposition grounds.

The water supply of Paris is variable, both in quality and in the great number of its sources. These are chiefly the river Vanne, the Marne, the Seine (at several points above and below the city), the Dhuis, the Ourcq, certain artesian wells, and the aqueduct of Arcueil, the total supply amounting to about fifty to sixty gallons per capita per day for all purposes. The household consumption is regulated by a stop-cock provided with a metre to about twelve gallons per capita daily, the annual price being one hundred and twenty francs per year per cubic metre daily, or twenty francs per year for one hundred and twenty litres' daily consumption (about $23 per year for two hundred and sixty-five gallons' daily use, or $4.00 per year for thirty gallons daily). The water pipes for household use are mostly of lead.

In recent years further measures have been taken to introduce the waters of two other sources, the rivers Loing and Lunain, and these works are nearly if not quite completed. Other improvements were the introduction of the Anderson process for purifying the water, together with filtration of the water through sand of that part of the supply which is pumped from the Seine at Choisy, and from the Marne at Neuilly and at Nogent, all of which are a few miles above the city. It still remains true that several suburban villages below the city, Asnières, Bois de Colombes,

and others are compelled to use *l'eau de Seine naturelle*, after being polluted with the sewage of the city and of many riparian industries.[1]

The general introduction of water closets in Paris since 1887 has largely increased the consumption of water for household use.

The relation of typhoid fever to the public water supply of the city has recently been a subject of lively discussion at the meetings of the Municipal Council, and also of the Council of Public Health and Safety of the Department of the Seine. The increase of typhoid fever in Paris during the past year has been very noticeable, the cases and mortality from this cause reported since last July indicating a genuine epidemic, and already exceeding the figures quoted for the epidemic of 1892. The following are the figures for the past five years:

Years.	Cases.	Deaths.
1895	1,389	271
1896	1,243	262
1897	1,342	249
1898	1,288	251
1899	4,329	802

The cases reported in the first ten weeks of 1899 were 398, while those of the corresponding period of 1900 were 891 (ten weeks ending March 11th).

Drs. Martin, Thoinot, Miquel and Navarre, all physicians of the highest authority, agree in attributing this increase to the pollution of the water of the Vanne. The latter, in speaking before the Municipal Council, produced a report from Dr. Moreau confirming the same statement by the fact that the town of Sens has been suffering from a coincident epidemic of typhoid, that place also being supplied with Vanne water. It was also noticed that those who did not use this water at Sens were exempt from the disease.

Dr. Martin, well known as the chief medical inspector, says: "The discovery of specific bacilli by Dr. Miquel at the point where the Vanne enters Paris, and by Dr. Vaillard at other points in the system leaves no doubt that the germs of typhoid fever were carried by this water. Samples taken July 31st, August 3d and 26th, by different authorities presented the characteristics of the bacillus of Eberth."

Shortly before the session of the Municipal Council, Dr. Thoinot, who had been dismissed from his position as secretary of the French Consulting Committee of Public Hygiene, at the suggestion of Dr. Monod, Director of Public Health, for having dared to publish an opinion on this question, addressed the following note to Dr. Navarre:

Dr. Vaillard, chief of the laboratory of Val-de-Grace, has personally confirmed the discovery of the bacillus of Eberth, during the progress of the epidemic of 1900. He has added that all the characteristics, even that of agglutination, are present.

(Signed.) Dr. Thoinot.

It now appears that the opinions of these eminent experts are discredited by the Prefect of the Seine, who says in so many words, "The water of the Vanne must not be incriminated in any way. It is extremely pure. No one has found in it the bacillus of Eberth."

The *Journal* continues in a similar manner, "We all know that the Prefect of the Seine is an administrator of the highest ability, but nothing has induced us to believe up to the present time that he has a profound knowledge of bacteriology, and even such knowledge of the subject as he had was wanting before the question was introduced at the meetings of the Municipal Council. He deemed it sufficient, however, to have a few minutes' conversation with some learned expert (whose name we regret to say he has withheld) to become forthwith, in his own opinion, 'very well posted upon the subject.'"

The Prefect, in his address to the Council, quoted in the *Journal*, appears to have made a studied attempt to mystify his hearers with the time-worn story of the subtle distinctions between the bacillus of Eberth and the various Eberthiform bacilli, and seeks to excite ridicule of the charges which have been made. He closes as follows: "If any one asks me the question, have you identified the typhoid bacillus in the water of the Vanne? I can only answer, No!"

But the plain, undeniable fact remains that typhoid fever during the past few months has prevailed to an extent unequalled for many years, and is specially prevalent in those quarters which are supplied with the Vanne water. In February, 1900, in the sixteenth *arrondissement* of Paris (supplied only by the water of the Avre) there was not a single case of typhoid fever; in the seventeenth, mostly supplied by the same water, there were only 13 cases, but in the sixth, seventh and eleventh *arrondissements*, supplied with the Vanne water, there were respectively 48, 23 and 59 cases.

In the discussions before the Council of Public Health and Safety, there appears to have been no doubt manifested that the water of the Vanne was the cause of the epidemic. Dr. LeRoy des Barres, in addressing that body, proposed that measures be immediately taken to secure the freedom of all the sources of water supply of Paris from pollution. The *Journal* commends the administration in its efforts to protect the new sources of supply (the Loing and Lunain) from harm, but criticises its inaction in regard to other existing sources. In the entire discussion much attention appears to have been given to bacterial examination, but there is almost entire absence of information upon the subject of investigation as to the source of contamination and the necessary measures taken for its prevention. Germ-hunting is an important part of sanitary work, but it is a far more important duty, the source having once been located with a fair degree of certainty, to seek the *fons et origo mali* at the fountain head and to remove or prevent it there. It is futile to waste time in discussing the minute distinctions of Eberthiform bacilli when the facts as shown by noted experts point to the pollution of a certain water supply, and if the duty of preventing the pollution or of providing some other means of protecting

[1] Revue d'Hygiène, vol. xix, p. 12.

the inhabitants of districts supplied is not properly attended to, the municipal authorities need not be surprised if the Exposition receipts do not fulfil their expectations.

SIR ANDREW DOUGLAS MACLAGAN.

IN the recent death of Sir Andrew Douglas Maclagan, Edinburgh adds another name to the list of its distinguished deceased physicians. He was a notable man in a coterie of which William Rutherford, John Struthers, John Duncan and Grainger Stewart were members, and leaves a gap in the social as well as in the studious life of his community which it will be hard to fill. A highly appreciative obituary notice has recently appeared in the *British Medical Journal*, which admirably sums up his character and varied attainments. He was one of a distinguished family, members of which have risen to the front rank in other walks of life as well as in medicine. Both Sir Douglas and his father had the unique honor of having been president of both the Royal College of Physicians and of Surgeons of Edinburgh. His life was a varied one, devoted largely to teaching in the subjects of toxicology and medical jurisprudence. "He was characterized by dignity of bearing, courtesy, courtliness, culture and a wide and minute knowledge of his subject. He constantly urged the importance, the gravity and the responsibility of medical men in giving evidence as skilled witnesses in medico-legal cases. He was himself an ideal skilled witness." But he was much more than a physician devoted to his calling and its advancement. He had many talents of a literary sort as well. As his obituary notice puts it, he was a poet and a man of great and genial humor. He had a playful fancy and a pretty wit. His lays, or poems, or songs, were possessed of high artistic merit. He was a regular attendant at the annual dinners of the New Town Dispensary, and a number of his songs were composed and first sung in his capacity of poet laureate of that Dispensary, at the old Douglas Hotel in St. Andrew Square. At one of the last of those dinners he was fittingly crowned with a wreath of laurel, a tribute which Sir Douglas valued most highly. He was a thorough sportsman. Even in his latter years, a friend writes, any one who has "been out" with him must have been struck by the light and athletic figure of the old man as he would "blithely tread the bloomin' heather," as his own song has it. A member of many learned societies and the recipient of university honors, he died finally full of years, taking with him the respect and esteem of his contemporaries and students, a representative of the type we are pleased to call gentlemen of the old school. At his funeral, by his own request, while the mourners were taking their places in the church, the pipe-major of the Third Battalion, Gordon Highlanders, played on the bagpipes the plaintive wails of the "Flowers of the Forest," and "Lovat's Lament."

DR. BOWDITCH'S ADDRESS.

WITH the general ferment now going on in education in general, and medical education in particular, repeated expressions of opinion on the part of those who may speak with authority are timely and welcome. We would direct the attention of our readers to Dr. Henry P. Bowditch's address, as President of the Congress of American Physicians and Surgeons, printed in another part of this issue. Dr. Bowditch speaks from a ripe experience, extending through the many vicissitudes of medical teaching which have marked the past twenty years. His remarks are, therefore, deserving of, and no doubt will receive, the closest attention. We are glad to note a perfectly definite desire to do full justice to the methods of the past, while recognizing the fact that some of those methods have outgrown their usefulness. This, coupled with the conviction that medical knowledge has passed beyond the limits of a rigidly prescribed course, gives to the address a judical quality which is at times lacking in the first enthusiasm of reform. We have of late frequently found occasion to express ourselves as advocates of change in the form of instruction. This is inevitable and wholly desirable, but this should never lead us into the error of supposing that the acquisition of knowledge is entirely dependent upon the manner of its presentation. The teacher is, after all, the essential element in the success of any system. We look, therefore, to a readjustment of the form of instruction which will lead to the development of the teacher as well as of the student. We have no doubt that the didactic lecture will be dignified rather than degraded by the attacks made against it, and the observation and independence of the student cultivated at the same time, through individual work in a general atmosphere of greater freedom in the choice of his studies. These seem to be some of the lessons which Dr. Bowditch's address teaches.

MEDICAL NOTES.

PLAGUE. — Conditions in Hawaii are much improved. A report under date of April 9th gives one new and fatal case. In general, the prospects are encouraging. No general crusade had been begun against the rats, which are supposed to spread the plague, but a bounty of twenty-five cents had been offered, and a professional rat catcher appointed by the Board of Health.

"UNIVERSITY MEDICAL MAGAZINE."— It is announced that the *University Medical Magazine* will be hereafter published by the University of Pennsylvania, under the editorship of Charles H. Frazier, M.D. Owing to the necessity for reorganization the new volume begins with the March issue. In appearance and matter this issue is most satisfactory.

TWO CENTENARIANS. — Mrs. Mary Blizard, of Macdonald's Point, N. B., who enjoyed the distinction

of being the oldest woman in Canada, has died. She was born in 1792. Richard Monahan, aged one hundred years and twenty days, has recently died at Staten Island. He served under Andrew Jackson in one of the Indian wars.

Yellow Fever in Mexico.— Yellow fever is reported at Vera Cruz, at Tehuantepec and at Salina Cruz. Unusually hot weather and imperfect sanitation appear to be responsible.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, May 2, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 69, scarlatina 50, measles 171, typhoid fever 6, small-pox 1.

The Massachusetts Medical Society Protected.— A decision of importance has recently been handed down by Judge Barker in the Supreme Court, relative to a petition brought by a physician against the censors of the Massachusetts Medical Society, to compel them to examine him, with a view to giving him a certificate of the Society, approving him as a physician. On the broad question of the case the Court ruled that it was his opinion that the corporation owed no public duties such as contended for by the petitioner, and was not required to give a certificate of qualification to a physician. The Court said it would report the case to the full bench if counsel should agree upon a report.

Boston Society of Medical Sciences.— At a meeting of the Society held April 24th, Dr. Franklin Dexter reported further observations on the morphology of the digestive tract of the cat. Dr. Wm. Hallock Park, of New York, a guest of the Society, read two communications on "Some Experiments in the Nature of Antitoxins and the Elimination from Antitoxic Sera of their Deleterious Substances," and on "Behavior in Ice and River Water of Twenty Cultures of Typhoid Bacilli, Derived from Various Sources." Dr. E. W. Taylor demonstrated a series of preparations illustrative of diffuse degeneration of the spinal cord.

Death of Harriet P. Dame.— Harriet P. Dame, of Concord, N. H., has recently died at the age of eighty-five. She is well known for her services as a nurse during the whole period of the Civil War. She was on one occasion captured by the Confederate troops, but was given a pass through the lines in consideration of her services to both the Confederate and Union soldiers. Since the war, Miss Dame has been honored by various military organizations. From 1867 to 1895, she was employed as clerk in the Treasury Department at Washington.

Fiftieth Anniversary of the Suffolk District Medical Society. — The annual meeting, commemorating the fiftieth anniversary of the Suffolk District Medical Society, was held at the Massachusetts Institute of Technology, Saturday, April 28th. Brief remarks, chiefly of a reminiscent character, pertaining to the formation, history and objects of the Society were made by Drs. B. Joy Jeffries, A. T. Cabot, J. C. White, D. W. Cheever, J. C. Warren, Geo. B. Shattuck and H. L. Burrell.

Aid for the Vincent Hospital.— The recent theatricals in aid of the Vincent Hospital have resulted in raising an amount of money sufficient to replenish liberally its somewhat depleted treasury. Last year 120 patients were treated — wage-earning women and girls — of whom 70 were free, and the others paid only small sums for treatment and care, according to their ability. The hospital has only a small invested fund, and its entire income met only about three-sevenths of its expenses last year.

Meeting of Carney Hospital Physicians.— The twelfth annual reunion of the Carney Hospital Alumni Association took place last week at the hospital. In the afternoon several operations were performed by surgeons of the hospital, and later the wards were inspected. At the annual business meeting the following named officers were elected: Dr. M. E. Keane, of Manchester, N. H., President; Dr. J. B. Hastings, Vice-President; Dr. May, Secretary and Treasurer.

A School Closed in Waltham, Mass.— It has been thought advisable to close temporarily St. Joseph's Parochial School in Waltham, on account of the prevalence of diphtheria in the town. This precautionary measure has been taken by the management of the school, and the Board of Health has taken action to disinfect the premises.

Ripley Clark, M.D.— Dr. Ripley Clark, of Windsor, Vt., died April 23d. He was graduated at Dartmouth Medical College in 1846, and since 1861 has practised medicine in Windsor, until failing health obliged him to retire. He had been a member of the State Legislature, and was at one time president of the National Bank.

Unnecessary Alarm Regarding Small-pox.— The case of small pox recently reported from Worcester, supposed to have been contracted on the steamer *New England*, has proved on investigation not to be the disease. Other suspicious cases from the same source have also proved not to be small-pox.

A New Strength Record.— H. F. Cochems, a student at the Harvard Law School, has recently broken his previous strength record of 1,761.4 points, as reckoned by intercollegiate test methods, by making a total of 1,809 points. This was done without systematic preliminary training.

NEW YORK.

New York's Water Supply. — Controller Coler has made public a digest of the report on New York's water supply prepared by John A. Freeman, hydraulic engineer, who has been engaged in the study of the question since August last. While, with moderate and practicable restriction of waste, the Croton watershed, supplemented by the Bronx and Byram watersheds, can furnish a safe supply for Manhattan and

the Bronx for a few years to come, it is recommended that a source of additional supply be sought which will furnish at least 500,000,000 gallons per day. It appears most probable that an additional supply of 500,000,000 gallons per day, under the growth which is almost sure to come to Greater New York, would be exhausted in twenty years if use and waste go on increasing as they have for five years past. A supply of only 150,000,000 gallons, the utmost obtainable from either the Esopus Creek or the Ten Mile River alone, would probably be exhausted inside of fifteen years if it had to serve for all boroughs. It is therefore recommended that the investigation for new sources take a broader scope, looking further into the future than ten or fifteen years, and that a progressive line of extension and development for New York's water supply for a long period to come be now planned, much as has been done for the supply of the district around Boston. The sources of supply for the future are mentioned as the Upper Housatonic, combined with Ten Mile River, Long Island east of Massapequa, the watersheds east and west of the Hudson, the Ramapo River, and filtered water from the Hudson at Poughkeepsie. Water could also be taken from the Adirondacks at $50 per million gallons, or, for a 400,000,000 gallon supply and over, at $40. The placing of flashboards on the reservoir, for the purpose of increasing their storage capacity, is advocated as a precautionary measure.

STATE HOSPITAL FOR THE INSANE. — Governor Roosevelt has signed the Burnett Bill, relating to State hospitals for the insane in New York City and vicinity. By this bill are legislated out of office a number of physicians who have long been identified with the management of these institutions; namely, Dr. A. E. MacDonald, general superintendent of the hospital on Ward's Island, Dr. Elliott, medical superintendent of the hospital at Flatbush, Brooklyn, and Drs. O. M. Dewing and A. C. Evarts, respectively general superintendent and medical superintendent of the hospital at King's Park, Long Island. Its enactment was urged by the State Commission in Lunacy, it is said, in the interest of economy, on the ground that it would save a considerable amount in salaries by abolishing unnecessary offices. In addition to abolishing these offices the new law divides the present Manhattan Hospital into three parts and the Long Island Hospital into two. That part of the former located on Ward's Island, consisting of two sections, for male and female patients respectively, is to be known as the Manhattan State Hospital for Ward's Island, and that part at Central Islip (the third section), as the Manhattan State Hospital at Central Islip. The two sections of the Long Island Hospital are to be known as the Long Island State Hospital at King's Park and the Long Island State Hospital at Flatbush.

THE MEDICAL TRAINING OF NATIVES. — On the occasion when Dr. Peck read his paper at one of the sectional meetings of the Ecumenical Missionary Conference Dr. C. F. Harford-Battersky, Principal of Livingston College, London, acted as chairman and introduced the general subject, "The Medical Training of Natives; Whether Advisable; How and Where Should they be Trained?" All those who took part in the discussion were agreed as to the advisability of such training, but the general sentiment was in opposition to their being brought to Europe or America for instruction. Among the speakers were Drs. Edwin S. Fry, of the Edinburgh Medical College, who described his own work at Travancore, in Southwestern India; John C. Berry, of Worcester, Mass., who had for many years been stationed at Ksoto, Japan, where he established a training school for nurses; L. R. Scudder, of India; Avison, of Korea; J. B. Fearn, of Soo Chow, China, and G. D. Dowkontt, of New York. The last named referred to some Armenians who had received their medical education under the auspices of the American Medical Missionary Society, and who, instead of returning home, were now practising in the city of New York. The only speaker who favored the training of natives in American or European colleges was Dr. Moses C. White, of the Yale Medical School. The fact that in many countries dissection was not practicable made it all the more necessary, he thought, that they should be sent where they could have the advantage of the practical study of anatomy.

LEGISLATION REGARDING GARBAGE. — On April 25th the Governor signed the Barren Island Bill, compelling the removal of the garbage works located there, and the abatement of the alleged nuisance within one year. The bill, which is based on investigations made in this country and in Europe by Health Officer Doty, at the request of the Governor, also provides for the burning of the city refuse in crematories erected in different localities. The adoption of the measure was strongly urged by Dr. Doty as being in the interest of the public health, and also endorsed by experienced sanitarians. The strongest objection against the bill was on the score of increased expense to the city. There are mechanical and engineering experts, however, who claim that the cremation process, if given a fair trial, will prove more economical than the present reduction system now in use on Barren Island.

APHASIA AND PRESERVED CONSCIOUSNESS. — There is at present an interesting case of traumatic aphasia at the Harlem Hospital. The patient is an Italian, thirty-five years old, who on April 10th was shot in the left temple during a quarrel. At the hospital four ounces of brain matter were removed, but the ball could not be found; and, contrary to expectation, after a time he began to recover. During the past week it was accidentally discovered that he had been conscious almost from the first, although he had lost the power of speech. At the time of the operation and long afterwards he was supposed to be entirely unconscious, but he indicated that he had been aware of everything that was going on, although he experienced no pain. He is now able to repeat one

or two words at a time, but cannot apparently remember a sentence of four or five words.

VAGARIES OF A SOMNAMBULIST. — George Ritterbrand, a young somnambulist, whose habit of sleep-walking is said to have been due to deep grief over the death of his father, recently disappeared, and four days afterward walked into a police station-house declaring that he had lost all recollection of his identity. During this period he had kept an account of his wanderings, which were confined to Manhattan and Brooklyn, in a note-book. The writing was entirely different from his ordinary penmanship, and, though he was a graduate of the College of the City of New York, the spelling and construction were those of an illiterate person.

A LARGE VERDICT FOR PERSONAL INJURY. — A verdict for $25,000 has been awarded in the Kings County Supreme Court to Dr. Walter B. Wellbrock, of Brooklyn, in his suit against the Long Island Railroad Company to recover $100,000 for personal injuries. On Memorial Day, 1897, he was on a tallyho coach which was run down by a train, and he was so severely injured that his life was despaired of. This was the second trial of the suit, the jury disagreeing in the first trial.

BEQUESTS TO HOSPITALS. — Charles P. Huntington, a wealthy sugar merchant, who died on April 20th, left $20,000 each to Roosevelt Hospital and the New York Society for the Relief of the Ruptured and Crippled. By the will of Mrs. Cornelia Rhoades $10,000 is bequeathed to the Society for the Relief of the Destitute Blind and $1,000 to the New York Eye and Ear Infirmary.

ENOCH V. STODDARD, M.D., REAPPOINTED. — At the annual meeting of the State Board of Charities, held in Albany on April 12th, Dr. Enoch V. Stoddard, of Rochester, was elected vice-president for the sixth consecutive term.

THE DINNER TO DR. JACOBI. — Hon. Carl Schurz is to be the principal speaker at the dinner in honor of Dr. Abraham Jacobi in New York on May 5th.

ARMY NOTES.

SCHOOL OF INSTRUCTION FOR THE HOSPITAL CORPS. — Recent advices from Manila report the establishment at that place of a school of instruction for the hospital corps, similar in character to those now existing in this country at Washington and San Francisco. This school has accommodations for one hundred men. The instruction includes a period of fourteen weeks and embraces the subjects of first aid, minor surgery, pharmacy, elementary anatomy, physiology and hygiene, nursing and ward management, clerical work and regulations. Great attention is also given to bandaging and the handling and transportation of wounded. Instruction is also given in general cooking and in the preparation of light diet for the sick. The course of instruction is continuous and a class is graduated at the end of each month, the men being sent to various commands and exchanged for uninstructed men. The value of these schools of instruction to the military service cannot be overestimated. While the period of instruction is necessarily brief, the men acquire a considerable knowledge of their future duties, physically profit by their drills, and are imbued at the outset of their service with ideas of soldierly smartness and discipline, which are material aids to military efficiency.

SESSIONS OF THE ARMY MEDICAL SCHOOL DISCONTINUED. — It is understood that the great need of medical men in the Philippines will prevent the re-establishment of sessions of the Army Medical School at the Army Medical Museum during the coming winter. The course of this school was calculated to supplement the training given by the medical colleges of the country and was of the greatest value in giving systematic instruction to young medical officers in various subjects, particularly military medicine, surgery and hygiene, and in organization and army regulations, which they otherwise learned only through long experience. It is much to be regretted that the needs of the service will not permit a resumption of the sessions of the school at the present time.

A BILL REGARDING THE RANK OF THE SURGEON-GENERAL. — A bill has recently been introduced in the House by a member of Congress from Georgia, giving the Surgeon-General of the Army the rank and pay of major-general. This is in line with the action taken some months ago by the Savannah Medical Society, urging the establishment of this grade as being warranted by the great responsibilities which now and in the future will continue to devolve upon the chief of the Army Medical Department.

APPOINTMENT OF LIEUT.-COL. A. A. WOODHULL. — Lieut.-Col. A. A. Woodhull, until recently Chief Surgeon in the Philippines, has been placed in charge of the Army Medical Museum and the library of the Surgeon-General's Office, Washington, D. C.

METEOROLOGICAL RECORD

For the week ending April 21st, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		We'th'r. *		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A.M.	8.00 P.M.	Daily mean.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	8.00 A.M.	8.00 P.M.	
S...15	30.22	52	63	41	65	36	50	W.	N.	12	10	C.	C.	
M...16	30.44	55	64	42	60	43	52	S.W.	S.W.	7	13	C.	C.	
T...17	30.41	50	54	46	70	83	76	W.	S.	4	10	O.	O.	.06
W...18	30.11	56	61	52	88	90	89	S.W.	S.W.	22	18	R.	R.	.12
T...19	29.88	63	74	52	92	44	68	S.W.	N.W.	15	20	O.	C.	.42
F...20	30.12	58	70	47	79	54	66	N.W.	S.	15	10	C.	C.	
S...21	30.12	62	74	49	60	47	54	W.	S.W.	4	7	F.	O.	

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☞ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, APRIL 21, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrhœal diseases.	Diphtheria and croup.	Measles.
New York	3,654,574	1578	550	21.12	24.84	1.08	3.60	1.62
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	—	—	—	—	—	—	—
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	226	68	17.60	23.76	.88	3.52	.44
Baltimore	506,389	245	70	12.30	23.78	—	2.05	.41
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	154	55	16.25	20.05	1.30	2.60	.65
Washington	277,000	137	34	20.44	15.06	—	2 92	2.19
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	81	19	25.83	36.90	4.92	—	1.23
Nashville	87,754	21	11	19.04	80.92	—	—	—
Charleston	65,165	—	—	—	—	—	—	—
Worcester	111,732	47	14	27.69	21 28	2.13	—	2.13
Fall River	103,142	47	14	24.43	14.91	10.65	—	—
Cambridge	97,520	30	9	20.00	13.33	—	3.33	—
Lowell	90,114	34	8	14.70	14.70	—	—	—
New Bedford	70,511	39	11	20.48	22.04	—	2.56	—
Lynn	68.218	—	—	—	—	—	—	—
Somerville	64,394	21	7	33.33	23.85	—	4.77	—
Lawrence	59,072	21	6	9.54	19.08	—	4.77	—
Springfield	58,266	31	2	6.46	22.61	3.23	—	—
Holyoke	44,510	19	6	37.10	10.60	5.30	—	—
Brockton	38,759	13	3	22.07	—	—	7.69	—
Salem	37,123	10	6	—	40.00	—	—	—
Malden	36,421	5	2	20.00	—	—	—	—
Chelsea	34,235	17	6	35.28	—	—	23.52	—
Haverhill	32,651	18	3	11.11	11.11	—	—	—
Gloucester	31,426	8	2	12 50	—	—	—	—
Fitchburg	30,523	10	5	40.00	10.00	—	10.00	—
Newton	30,461	8	2	50.00	12.50	—	12.50	—
Taunton	28,527	26	4	15.40	11.55	—	—	—
Everett	28,102	8	2	12.50	—	—	—	—
Quincy	24,578	5	—	20.00	—	—	20.00	—
Pittsfield	23,421	—	—	—	—	—	—	—
Waltham	22,791	5	1	—	—	—	—	—
North Adams	21,583	7	2	28.56	28.56	—	—	—
Chicopee	18,316	14	5	14.28	35.70	—	—	—
Medford	17,190	4	—	50.00	—	—	—	—
Newburyport	15,636	4	—	—	—	—	—	—
Melrose	14,721	4	—	—	50.00	—	—	—

Deaths reported 2,909; under five years of age 940; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 600, acute lung diseases 701, consumption 308, diphtheria and croup 90, diarrheal diseases 44, measles 40, whooping-cough 30, erysipelas 27, scarlet fever 25, typhoid fever 22.

From whooping-cough New York 14, Boston and Washington 3 each, Providence and Chelsea 2 each, Pittsburg, Nashville, Fall River, Cambridge, Springfield and Brockton 1 each. From erysipelas New York 20, Boston and Baltimore 2 each, Springfield 1. From scarlet fever New York 18, Boston 3, Pittsburg 2, Baltimore and Somerville 1 each. From typhoid fever Pittsburg 10, New York 3, Washington and Newton 2 each, Boston, Lowell, New Bedford, Holyoke and Fitchburg 1 each. From cerebrospinal meningitis New York 10, Somerville 2, Worcester 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending April 14th, the death-rate was 22.4. Deaths reported 4,998: acute diseases of the respiratory organs (London) 501, measles 182, whooping-cough 144, diphtheria 51, fever 38, diarrhea 33, scarlet fever 27, small-pox (Liverpool) 2.

The death-rates ranged from 15.6 in Burnley to 30.5 in Manchester: Birmingham 24.8, Bradford 19.5, Croydon 18.7, Gateshead 21.0, Hull 20.7, Leeds 23.9, Liverpool 24.5, London 21.0, Newcastle-on-Tyne 21.1, Nottingham 20.2, Portsmouth 18.2, Sheffield 27.2, Sunderland 16.6, Swansea 19.8, West Ham 15.8.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING APRIL 28, 1900.

L. MORRIS, passed assistant surgeon, detached from the "Brooklyn" and ordered to the "Baltimore."

J. STOUGHTON, passed assistant surgeon, detached from the "Bennington" and ordered to the "Castine."

T. M. LIPPITT, assistant surgeon, detached from the "Baltimore" and ordered to the "Oregon."

J. L. THOMPSON, assistant surgeon, detached from the "Castine" and ordered to the "Bennington."

A. G. GRUNWELL, assistant surgeon, detached from the "Yosemite" and ordered to the "Brooklyn."

J. F. LEYS, passed assistant surgeon, detached from the "Essex" on reporting of relief, and ordered home and to wait orders.

C. H. DELANCY, assistant surgeon, detached from the "Amphitrite" and ordered to the "Essex."

J. C. THOMPSON, assistant surgeon, will return to the United States by the "Bennington."

A. FARENHOLT, passed assistant surgeon, will return to the United States by the "Concord."

M. R. PIGOTT, passed assistant surgeon, detached from the Naval Academy and ordered to the "Chesapeake" same day.

K. OHNESORG, assistant surgeon, detached from the Naval Academy and ordered to the "Newport" same day.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING APRIL 26, 1900.

GASSAWAY, J. M., surgeon. Leave of absence for five days from April 23, 1900, under the provisions of Par. 189, Regulations, M. H. S. April 23, 1900.

WERTENBAKER, C. P., passed assistant surgeon. Detailed to represent the Service at the meeting of the Association of Military Surgeons of the United States at New York, N. Y., May 31 to June 2, 1900. April 25, 1900.

STIMPSON, W. G., passed assistant surgeon. Granted leave of absence for ten days from April 28, 1900. April 25, 1900.

MCMULLEN, JOHN, assistant surgeon. Granted leave of absence for three days. April 18, 1900. Granted four days' extension of leave of absence. April 24, 1900. Upon expiration of leave of absence to proceed to the Gulf Quarantine Station, Miss., and report to the medical officer in command for temporary duty. April 24, 1900.

GOLDBERGER, JOSEPH, assistant surgeon. Upon being relieved from duty at the Immigration Depot, New York, N. Y., to proceed to the Reedy Island Quarantine, Del., and report to the medical officer in command for duty and assignment to quarters. April 24, 1900.

EAGLESON, J. B., acting assistant surgeon. Granted leave of absence for three days from May 8, 1900. April 21, 1900.

RODMAN, J. C., acting assistant surgeon. Granted leave of absence for four days from April 23, 1900. April 20, 1900.

OLSEN, E. T., hospital steward. Upon being relieved from duty at Wilmington, N. C., to proceed to the Mullet Key Detention Camp, Fla., for duty. April 23, 1900.

CROWLEY, C. F., hospital steward. To proceed to Wilmington, N. C., and report to the medical officer in command for duty and assignment to quarters. April 23, 1900.

PROMOTIONS.

Passed Assistant Surgeons T. B. PERRY, R. M. WOODWARD and G. T. VAUGHAN, commissioned as surgeons. April 21, 1900.

APPOINTMENT.

CHARLES F. CROWLEY, of Nebraska, appointed junior hospital steward. April 21, 1900.

SOCIETY NOTICES.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. — A regular meeting of the Society will be held at the Medical Library, 19 Boylston Place, on Monday evening, May 7th, at 8 o'clock.

Dr. Wm. M. Conant will read a paper entitled "A Plea for the Fixation of the Kidney by the Anterior Abdominal Route." The subject will be discussed by Drs. Elliot, Munro, Richardson, Cabot, Warren, Watson, Thorndike, Cushing and others.

Dr. F. M. Briggs will show a case of "Contracting Scar of the Hand Remedied by a Flap from the Abdomen."

ARTHUR K. STONE, M.D., *Secretary*, 657 Boylston Street.

SUFFOLK DISTRICT MEDICAL SOCIETY, SURGICAL SECTION. — The Surgical Section will meet at the Medical Library, 19 Boylston Place, on Wednesday evening, May 9, 1900, at 8.15 o'clock.

Papers: "Report of Cases of Infection due to the Bacillus Aerogenes Capsulatus of Welch," by Paul Thorndike, M.D., assistant surgeon, Boston City Hospital, and Mr. Preston Kyes, of the Johns Hopkins Medical School."

"The Radical Cure of Hernia, with an Analysis of Ninety-eight Cases," by J. C. Warren, M.D.

F. G. BALCH, M.D., *Secretary*, 279 Clarendon Street.

BOOKS AND PAMPHLETS RECEIVED.

Bulletin of the American Academy of Medicine, April, 1900. Vol. IV, No. 6.

Report of the Kensington Hospital for Women (Non-sectarian) from October 10, 1898 to October 9, 1899. Philadelphia.

Original Articles.

ADAPTATION OF PATHOGENIC BACTERIA TO DIFFERENT SPECIES OF ANIMALS.*

BY THEOBALD SMITH, M.D., BOSTON.

MEDICAL science and medical art are concerned chiefly with the phenomena of human disease. All that medical science desires to know is the series of causes or antecedents leading to any given disease, and the series of phenomena which unfolds itself within the body during disease. Medical art wishes to know where human ingenuity may enter to modify, suppress or eliminate portions of this series so as to interfere with the progress of the disease, and bring it to a standstill. By general consent, hygiene devotes itself to the external phenomena; pathology, to the internal.

In the carrying out of this program, a strict adherence to the subject has been found inadequate to gain the results aimed at. To learn even the simplest fact, recourse to animal experimentation has been necessary at every step. But this somewhat artificial procedure of inducing diseases in animals, to many of which they are naturally insusceptible, has not furnished adequate information, and the next step is the study of diseases natural to animal life. This step has become necessary, because in the attempt to analyze the series of events culminating in human disease many links of the series are buried out of sight, or else inaccessible to analysis, since, by universal agreement, experiment upon the human subject, except when immediate benefit to the subject is expected, is not only not permissible, but, as a rule, sterile of results under the conditions necessarily imposed. In the host of infectious diseases of animal life the submerged links of human pathology are often in full view or readily found by the ingenious explorer. Different diseases furnish different parts of the unknown elements we are looking for.

In the investigation of infectious diseases, the study of the most important link in the chain of their causation — the micro-organisms — is equalled only in importance by the study of the host into which they enter. This study of micro-organism and host necessitates at once the extension of our field beyond the exclusively human infections, if we wish to investigate the great facts of epidemiology, the rise and fall of virulence in the micro-organisms, and the correlative immunity of individuals and races. Thus far, a scarcity of accurate facts, which is due chiefly to the inherent difficulties of the subject, confronts us, and, in presenting the little that is at hand, I shall have to take a more or less speculative position and point out the problems, the pursuit of which is likely to bring back important information.

If we glance at the infectious diseases which we share with animal life, or in which the latter enters as a necessary factor, we find quite an array, readily divisible into groups:

(1) Diseases common to man and certain animals, and presumably transmissible from animals to man, and vice versa. (Bubonic plague, tuberculosis.)

(2) Diseases common to man and animals, but not known to be transmitted. (Actinomycosis, tetanus.)

(3) Diseases transmitted from animals to man, but not as a rule communicated from man to man, owing to interfering conditions. (Anthrax, glanders, rabies, vaccinia, foot-and-mouth disease, meat poisoning, psittacosis, possibly also infections due to pus bacteria.)

(4) Certain specific symbiotic relations requiring two hosts for the complete life-cycle of the micro-organisms. (Malaria, trichinosis, tapeworm infection.)

A small proportion of the infectious diseases of man and a large proportion of the infectious diseases of higher animals are transmissible, or at least inoculable, upon smaller animals, producing in them diseases having more or less constant characters. The range of infectiousness varies considerably and arbitrarily without any at present assignable reasons. Thus the rat, which is, generally speaking, quite resistant to infectious agents, is extremely sensitive to the bacillus of bubonic plague, while the guinea-pig, which is susceptible to a wide range of infectious agents, is much less sensitive to this bacillus than the rat. The tubercle bacillus, which counts among its victims such a large number of mammals and birds, is quite harmless to the gray mouse, even in large doses. Certain bacteria affecting mammalia have also the power to produce disease in birds. Among these are the tubercle bacillus, mouse septicemia (swine erysipelas) and rabbit septicemia (fowl cholera).

The range of infective power seems, to a certain extent, to coincide with the readiness with which the bacteria can be artificially cultivated on various substrata, or, in other words, with their degree of saprophytism. Thus, the plague bacillus, the colon derivatives, the rabbit septicemia group, and anthrax, are quite readily cultivated, and their range is very wide. On the other hand, those micro-organisms which are cultivated with considerable difficulty, or not at all, or which are not even known, have a limited range. For instance, the organisms of leprosy, syphilis, gonorrhea and influenza do not attack animals; the same is true of the exanthemata of man, exclusive of variola and possibly scarlatina, and of certain diseases of unknown etiology in animals, among them contagious pleuropneumonia of cattle, and rinderpest. An important exception to this general statement is rabies, which produces disease in a considerable number of species. Many of these facts have been known for years, and are among the most familiar to bacteriology. The essence of such peculiar selective action has not yet been studied, and it may contain much that will elucidate the perplexing problems of natural and acquired immunity from disease. They seem to support, so far as they go, the recent contention of P. Baumgarten, that much of the natural resistence to specific infectious agents is, after all, due to the absence of a satisfactory soil.

The investigation of infectious diseases of animal life has brought before us another phenomenon, which is of considerable importance. Certain bacteria, causing disease among different species, have certain affinities which force us to classify them together, and which enable us at the same time to clearly separate them from other pathogenic groups. One of the most important of these groups consists of derivatives of the colon bacillus,[1] which produce epizootics among swine, guinea-pigs and field-mice; spermophiles, which have been found associated with disease in horses, cattle and certain birds; with pseudotuberculosis in certain other species, and to which the bacillus icteroides of Sanarelli, and perhaps some forms belong which pro-

* Read before the Fifth Congress of American Physicians and Surgeons, held at Washington, D. C., May 1, 2 and 3, 1900.

duce disease in the human subject, and which have been variously classed as paracolon bacilli and paratyphoid bacilli. Outbreaks of meat poisoning in European countries, characterized by gastro-intestinal disturbance, are most likely due to this group of organisms, which are introduced into the body in raw meat.[3] The typhoid bacillus is probably a more highly modified offshoot of this same stock. There is much minor variation among these derivatives, which is probably due to an adaptation to different animal hosts. We might say that the colon bacillus, or some ancestral form, possessed certain qualities favorable to parasitism, which have enabled it to become a prominent pathogenic power under the form of a number of varieties.

Another group of closely related bacteria — the group denominated by Hüppe "septicemia hemorrhagica" — is one which is capable of the same analysis. It appears as the cause of fowl cholera and swine plague; it produces epizootics among cattle, buffaloes, various kinds of game, rabbits and guinea-pigs. It occurs in various forms of bronchopneumonia in mammals and is a frequent parasite of the mucous membrane of the throat in cattle, swine, cats and dogs during health. In these respects as well as in others it is the analogue of the micrococcus of sputum septicemia and of croupous pneumonia in man. It appears endowed with widely different degrees of virulence, giving rise to various types of septic diseases after inoculation into rabbits. Wherever found, it is recognizable to the trained bacteriologist from certain traits which it has in common with other varieties of the same species. A certain plasticity in its functional character enables it to become a dangerous plague to animal life, but it seems to have little or no power to attack the human subject.

The tubercle bacillus furnishes still another illustration. The avian type has been recognized as a variety for some years. Similarly the tubercle bacillus of cattle has a certain uniform character which I have thus far not found in any culture from the human subject.

Among the more vulgar pathogenic bacteria the streptococci are found widely distributed, infesting a variety of domestic animals and appearing in many different kinds of lesions. The initial difference in the virulence of streptococci from different sources is now a well-established fact. The staphylococcus also exists in animals under varieties, several of which have been more carefully studied.

Two main facts thus stand out among the phenomena of bacterial adaptation: (1) The direct passage of infectious agents from animals to man and from one animal species to another; and (2) the adaptation of the same stock to different species leading to certain more or less profound modifications of this stock into recognizable varieties or races. An important problem arising from the second proposition is the extent to which such races are capable of vicarious infection of different hosts. To this we shall return later in some concrete problems.

Turning now to the experimental phase of bacteriology for light upon this matter, we find certain principles established and confirmed by numerous experiments. Since the days of Davarine it has been known that the passage of certain bacteria through a series of susceptible individuals of some one species markedly increased the virulence of the micro-organism. This increase manifested itself both by shortening the period of time between inoculation and death and by the successively decreasing dose necessary to produce the same fatal result. This has been demonstrated by Davarine for rabbit septicemia, by Pasteur for *rouget* and rabies, by Petruschky for streptococci, and by Voges and others for various animal infections. Considering the excessively minute doses which experiments have found sufficient to produce death in cases of certain organisms like streptococci and rabbit-septicemia bacilli, we might suppose that the virulence can be indefinitely increased; but this seems possible only for certain species of bacteria and certain animals. With others, notably rabies, a limit has been reached which marks a certain condition of equilibrium.

The word virulence, however, has its restrictions and it was found in due time that the increase in virulence referred to might or might not mean a general increase towards other species. In fact, this increase may be associated with decrease towards other species. This was first claimed by Pasteur with regard to the bacillus of *rouget*, or swine erysipelas. By passing the bacillus through pigeons he made it less virulent to pigs. By passing it through rabbits he made it more virulent to pigs. This has been in general denied by Voges [5] recently, who states that the passage through one species reduces its virulence toward others and that to raise it toward pigs it must be passed through pigs themselves.

In the epizootic aphthæ (foot-and-mouth disease) of cattle and swine, whose etiology is still unknown, Löffler and Frosch [4] found that the lymph of the vesicles representing the eruption became attenuated if passed through calves alone. When, however, swine were alternated with calves, the virus maintained its infectious power. Another virus of unknown morphologic character, rabies, was increased in power by Pasteur, by passages through rabbits for both them and dogs. The transmission of the virus through monkeys and dogs gradually diminished and eventually extinguished the transmissive power, while the passages through cats increased it.[5]

There is thus no general scheme that will fit the results of experimental studies upon the increase, decrease or fixation of the virulence of pathogenic organisms by passages through series of animals. Each organism or related group of organisms needs to be considered by itself before generalization may be attempted. Undoubtedly such passages produce certain more or less permanent changes in the physiologic character of micro-organisms, which may lead eventually to the races to which we have already referred as the products of nature's work.

In supporting our views upon experimental results solely, we should bear in mind that the latter are the outcome, in the main, of experiments upon small, usually quite susceptible animals. Work upon larger animals endowed with a considerable degree of resistance and approximating the human species in this respect, is meagrely represented, and in some instances it has led to results quite at variance with expectation. For example, in certain plagues prevailing among larger mammals, it has been found very difficult to infect healthy individuals even with large doses of the pathogenic agent under artificial cultivation. Anthrax serum, which was powerless to protect rabbits, readily protected sheep from the fatal dose subsequently injected.

In the continued flux and change of relationship between the micro-organisms and their hosts, which is made incredible by what has been stated, but which our limitations in time, space, and sense organs do not permit us to follow in nature, the problem that presents itself to human medicine is this: How far does nature utilize animals as a workshop for preparing bacteria to act in a pathogenic rôle upon the human race? I do not intend to present an answer to this question, but simply to point out the desirability of learning more of the micro-organisms parasitic upon diseased and healthy animals, which are closely associated with man either as beasts of burden, as food producers, as pets, or as unwelcome, though insistent, members of our household.

We have already seen that with reference to certain specific micro-organisms, peculiar relationships among species come to the front. There is evidently some physiologic relation between man and the rat, as disclosed by bubonic plague, between man and the horse, as revealed by the bacillus of glanders. Some writers believe in a relationship between man and certain domestic animals with reference to scarlatina. More general relationships between larger groups of animals are established by anthrax and rabies. If we go a step further into a less cultivated domain, we can readily think of other possible relationships between human disease and animals in which the causes of human disease may live without producing any recognizable disease. We can neither dispute nor affirm such relationship because we know comparatively little, if anything, of the micro-organisms which thrive, say, upon the mucous membrane of horses, cats, dogs, rats, mice and certain birds which enter so largely into the daily life of man, both young and old.

Some of you will perhaps remember the accounts of the stir produced in lay and medical circles in Paris by the peculiar epidemic of 1892, caused by sick parrots from South America. This single epidemic involved 49 persons, with 16 deaths. Though the bacteriology is not yet unravelled, the causal relation is clear. Leichtenstern,[6] who has recently summed up the evidence concerning this new disease of psittacosis, gives some additional testimony from his own city, Cologne, which definitely implicates this household pet in the production of highly mortal family epidemics. Leichtenstern, in describing the peculiar atypical typhoid-like pneumonia found in this disease, emphasizes the fact that similar house epidemics of pneumonia of equal severity and atypical course have been not infrequently reported and have occurred in his own practice without the presence of parrots. The suggestion which comes to us in reading this is, why not look up other household pets? Are there affections among household animals, not pets, which are responsible? It is not necessary for me to continue these observations farther to show that in tracing the source of certain obscure diseases of man there is still a wide gap to be bridged over.

There is one other question which is more or less associated with the subject I have chosen, namely, the fluctuation in the virulence of pathogenic organisms and the bearing of this upon the appearance of infectious diseases in epidemic form. It is an old question to which I simply wish to add a thought. The commonly accepted view of the gradual self-limitation of epidemic diseases is the exhaustion of susceptible material. The recrudescence is similarly ascribed to the reappearance of a young, susceptible generation. Thus the reappearance of the eastern plague after an interim of months is ascribed by one observer to the new generation of rats. But this explanation, though it may be true for many diseases, may not be true for all. We have seen that the passage through a series of individuals of the same species may lead to the attenuation and gradual extinction of the virus. If we indulge in a little speculation along teleologic lines we shall see that the attenuation of virus limited to one host is not an unreasonable hypothesis. We may assume that all parasitism tends toward a more or less harmless symbiosis. This tendency is for the good of both the host and the parasite directly concerned. If the latter promptly destroys the former, as in acute septicemias, not only the host perishes, but the parasite may, because of the sudden change of environment necessitated by the death of the host. If the organism is a perishable one like the pneumococcus or its animal equivalent, the rabbit-septicemia bacillus, it may perish before reaching another individual.[7] Hence we should expect the virulent type in this instance to thrive only temporarily and in densely crowded localities, in large herds or flocks. If, however, some arrangement can eventually be established tending to more mutually friendly, symbiotic relations, both organisms are in a sense the gainers. In the two organisms mentioned, I interpret this symbiotic relation as a parasitism of the mucous membrane of the upper air passages without any disturbance of health. The tendency of the diphtheria bacillus seems that way at present. This symbiosis probably leads to a loss of virulence, a weakening of the destructive powers toward the particular host in question.[8]

If the pathogenic bacteria have but one habitat — the one in which they produce a specific infectious disease — the probabilities are, I think, in favor of a gradual mitigation of the type of disease. This may be so slow that we, as individuals, cannot perceive it. A continuation of this process may eventually make the microbe of secondary importance which then acts only when other agencies prepare the way, as is probably the case with croupous pneumonia in man and various types of pneumonia in animals, or else the disease becomes greatly prolonged, as in leprosy, syphilis and tuberculosis, which are in reality mild types of parasitism when compared with the virulence of cholera or the plague. On the other hand, the bacteria may have another habitat in which they recruit their virulence. In this case we may expect the diseases to appear at times in epidemic form when transmission from individual to individual is possible. For the spore-producing bacilli of tetanus, anthrax, malignant edema and *Rauschbrand*, the normal habitat is probably the intestinal tract, fecal matter, the soil and decomposing material in association with other favoring bacteria. They are protected by the capacity for spore formation from the necessity of adaptation to a varying environment. For the sporeless and easily perishable bacteria I cannot conceive this habitat to be other than the human or animal body. In these various situations a virulence for other species is probably maintained owing to certain unknown physiologic relationships between the species, as already suggested.

I am inclined to think that the great specific energy of many disease germs was acquired in earlier geologic

ages, possibly in animals of very different type from those now living. But it is not improbable that the process of making pathogenic bacteria is going on now in the animal world, to be noticed only when these bacteria have been transported by some accident from their unseen habitat to species which happen to be susceptible. Then a disease appears, and we become cognizant of the disease germ. It is difficult to explain the incidence of certain animal diseases, especially the explosive septicemia, in any other way. Let us take a familiar organism to illustrate this hypothesis. It is difficult, for instance, to conceive the colon bacillus as acquiring pathogenic or invasive properties by a saprophytic life in the intestinal tract of man without at the same time inducing immunity in the race. It is not so difficult to conceive of colon bacilli living in such an environment in the intestinal tract of certain animals as to acquire at the same time pathogenic properties towards man and other animal species. In other words, the energy acquired by certain pathogenic bacteria may be gained under peculiar conditions and to discover these conditions, if still prevailing, is one of the problems of pathology and bacteriology. Viewed from this standpoint, micro-organisms causing acute disease are out of place or else endeavoring to create a new habitat. Disease itself is a temporary disturbance of relationship, largely accidental at first, but tending to become permanent as a form of parasitism. No better illustration of this statement is at hand than the Texas fever of cattle. In the South the micro-organism is a practically harmless symbiont of the blood. North of a certain line it produces a highly fatal disease in the same species, which endangers and may entirely interfere with the normal transmission of the blood parasite itself.

The difficulty encountered in making any brief statements upon the parasitism of bacteria and other low forms of life is very great and there is ample opportunity for self-contradiction. Perhaps the subject is best managed by some concrete illustrations.

I have already referred to the newest problem in our horizon, the bubonic plague. The German Commission [9] has come to the conclusion that in the endemic focus of the Himalayas the rats, or perhaps other species of animals (*Arctomys*), preserve the infection sometimes for a number of years. Observations during the epidemic in the large cities have shown that direct infection from man to man is not very common in the hospitals. Again, some of the French observers have found that passage of the bacillus through rats is likely to fail after a time. The hypothesis that occurs to us as harmonizing these various statements is that the plague bacillus gains its maximum virulence for man in the rat, for the rat in man, and that both species may be necessary to maintain the disease in an epidemic form.

The second illustration I take from tuberculosis. Under the conditions prevailing at present in civilized society, there are two species the victims of this disease, man and cattle. Many other species are susceptible, but the conditions surrounding them or governing the disease in them do not favor any general diffusion. In cattle the tubercle bacillus is remarkably uniform in its character and highly virulent to certain small animals like the rabbit. In man there flourish many races of the bacillus as regards virulence among them; the maximum virulence of the bovine bacillus has been reported but once (Vagedes). What relation exists between the human and the bovine plague? Evidently not an indiscriminate one. Does the latter furnish the human race from time to time with bacilli of high potency to take the place of the attenuated forms that thrive saprophytically in the lungs? Or is the specific adaptation of the two forms such that any relationship worth consideration no longer exists? These are momentous questions, which present themselves not only in this disease but in others. They should receive careful attention from the human pathologist in studying the effects of the mingling of different races of the human family and of the different varieties of pathogenic organisms which they bring with them. Such varieties may lead to an increase in the virulence of strictly human diseases as observed in any one locality.

Within recent years much ridicule has been poured on the theories of Pettenkofer concerning the fluctuation of epidemics with season and locality — the unknown "y" and "z" of etiology. But the bacteriologists who have been the chief aggressors have left on all sides large gaps in the etiology of infectious diseases, so that there is scarcely a malady whose micro-organism is now known which does not bristle with interrogation points. The sum total of bacteriologic knowledge points toward certain still unknown conditions which favor a restoration or a maintenance of virulence and which differ from those which are currently reported as in action.

This statement does not intend to cast doubt upon accepted views of the increase in virulence due to passages through series of susceptible individuals of any species. These are too firmly established to be vulnerable. Nor can we dispute the evidence that the decline of epidemics is largely associated with acquired immunity. But there are certain supplementary facts bearing upon our relation to animal life which medical science can well afford to take as a text in order to discover, if possible, some of the still unknown dynamic sources of human disease.

REFERENCES.

1. Journal of the Boston Society of Medical Sciences, 1900, iv, p. 95.
2. Centralblatt für Bakteriologie, 1897, xxii, p. 45.
3. Zeitschrift für Hygiene, 1898, xxviii, p. 38.
4. Centralblatt für Bakteriologie, xxii, p. 357; xxiv, p. 569.
5. Aögyes. Nothnagel's specielle Pathologie, v. Theil, ii Abth., p. 66.
6. Centralblatt für allgem. Gesundheitspflege, 1899, xviii.
7. The difficulty encountered in establishing artificially a plague among susceptible animals, even with a microbe of maximum virulence, was made evident by the failure of Pasteur to disseminate this septicemia among the rabbits of Australia. Similarly the hope that by imitating nature we can infect animals successfully with bacteria and other parasites has not yet been fully realized, probably because our imitation of nature is not perfect.
8. The persistence of pathogenic bacteria somewhere in the body after the acute disease has passed away is a phenomenon to which we have been accustomed in recent years and which has aroused considerable interest, mainly on account of the great difficulties which it places in the path of public health when endeavoring to secure satisfactory isolation of infected individuals.
9. Arbeiten a. d. D. Gesundheitsamt, 1900, xvi.

IMPROVED HOSPITAL FACILITIES FOR BROOKLINE, MASS. — The committee appointed to consider a new contagious hospital for the town will recommend a new building, particularly for the use of patients with scarlet fever and diphtheria. The accommodations for small-pox patients are regarded as adequate for present needs.

BACTERIOTHERAPEUTICS, WITH ESPECIAL REFERENCE TO TUBERCULOSIS.*

BY EDWARD R. BALDWIN, M.D., SARANAC LAKE, N. Y.

IN my effort to present this subject I will include for the purposes of this paper, in order to cover more broadly the use of bacteria in medication, both preventive or immunizing methods and serum therapeutics. I cannot, however, attempt more than a summary of our present knowledge of the subject in connection with human diseases other than tuberculosis.

The use of living but weakened bacteria in the prevention of the like disease has found but little scope outside of vaccination for variola and anthrax. Considerable immunity has been produced in this way experimentally against streptococcal, pneumococcal, diphtherial and tuberculous infections, but its therapeutic employment would obviously be irrational. Living streptococcus inoculations have, however, been by accident or intent successfully employed in the treatment of sarcoma and lupus (Coley's first method).

The employment of dead bacteria, their extracts or culture products, has at present an undoubted field in cholera, plague and typhoid prevention in human beings. The results of Haffkine's [1] anticholera inoculations have demonstrated its protective power for a limited time, while the use of extracts of plague bacilli gives promise of similar comparative immunity.[2] The inoculations against typhoid in the British army are encouraging in their results.[3] In other diseases there has been little encouragement except as regards the lower animals. For therapeutic use the extracts, or dead bacteria, have not commended themselves in acute diseases like typhoid, plague, sepsis, pneumonia and diphtheria.

The use of serums or tissue extracts of animals immunized or treated with bacterial substances for these purposes manifestly is much more applicable for therapeutics, because it brings to the aid of the infected organism the protective substances or powers of others. The striking success of diphtheria antitoxin in treatment has caused the flood of serums for all known diseases. It will here be sufficient to remind ourselves that except tetanus serum no others have shown brilliant results in human medicine. It is interesting to note that both these serums have pre-eminently antitoxic as distinguished from bactericidal powers. Among the serums that have claims upon our notice at present the streptococcus,[1] pneumococcus,[4] and that of recurrent fever [5] are said to have bactericidal or bacteriolytic properties only, while the serums of plague, typhoid and cholera may have both antitoxic and bactericidal powers. Of tuberculosis serum I will speak later.

Experiments upon animals, and to some extent upon man, are entirely satisfactory as a basis for a much wider usefulness of serums and tissue extracts as immunizing agents.

The promptly curative effects of diphtheria antitoxin may obscure in the minds of some the good results of immunization by its use, but its demonstrated value should encourage a much more extensive employment, especially as the improvements in preparation have lessened the dose and increased the potency. These remarks also apply with greater force to tetanus. It needs no sage to observe that at present bacteriotherapeutics and serum therapeutics have, with the exception of diphtheria, their best field for practical use in immunization against their respective diseases.

With this brief review of the general subject, with which I do not assume familiarity, I crave attention to some remarks with reference to tuberculosis.

While I consider it not unprofitable to mention the present clinical status of tuberculin, it is certain that it can serve no useful purpose to recount the history of the blind leading the blind of a decade ago. It remains a history for the contemplation of psychologists. The term tuberculin has been used to cover broadly all extracts and culture products of the tubercle bacillus, and should not be confused with serums, as is frequently done. The extracts prepared subsequent to Koch's original tuberculin that have been used clinically received various names according to their object and method of preparation, and may be enumerated as follows:

(1) Original tuberculin (abbreviated "T. O."); boiled, concentrated and filtered, glycerinated cultures; now chiefly used for diagnosis.

(2) Purified tuberculin ("T. Pur."); the resultant redissolved precipitate of the first with 60 per cent. alcohol.

(3) The new tuberculin ("T. R."); an unsterilized, unfiltered, glycerin-water semisolution of living, dried, pulverized, and washed bacilli.[6]

(4) Tuberculocidin and antiphthisin; dilute tuberculin made from the slight residue after precipitation with sodium-bismuth iodide.[7]

(5) Hunter's [8] modifications; similar to purified tuberculin by precipitation with ammonium sulphate.

(6) Tuberculoplasmin; the filtered watery solution of the protoplasm of moist living bacilli, extracted by crushing with hydraulic pressure.[9]

(7) Watery extracts of bacilli without culture medium.[10]

(8) Tuberculinic acid; the nucleic acid obtained from fat-free bacilli, decomposed by superheated steam [11]

It was soon discovered that the original tuberculin produced no immunity against relapses of tuberculosis, where the disease seemed completely arrested and even apparently cured by its use. Hence the new tuberculin, containing the substance of the bacilli and not its extractive matter, was introduced by Koch because it was found in animals to confer immunity against, as well as to be curative in the sense of complete arrest of, the disease.

The results of these experiments with the new tuberculin are entitled to respect, although not yet completely published as promised (see Beck [12]), because they show the possibility of producing at least temporary immunity in guinea-pigs. Unfortunately, the conditions are such that man cannot tolerate proportionately greater doses of this bacillus poison; nor, if he could, would the immunity be certain to be sufficiently lasting to commend its use. The clinical results, so far as they relate to new tuberculin for preventing relapses, are disappointing, though inconclusive as yet. Moreover, from our present knowledge of its effects, the tubercle-bacillus poisons used for immunization would require such care to avoid overdosage that grave danger of chronic poisoning and cachexia would result from attempts to keep up the immunity even in vigorous subjects.

* Read before the Fifth Congress of American Physicians and Surgeons, held at Washington, D. C., May 1, 2 and 3, 1900.

Therefore, it appears to me that the subject of tuberculin mainly interests us at present in relation to its local action on tuberculous tissue, and to the mechanism of this specific relatively increased tolerance, observed especially as a consequence of injections of the new tuberculins, dead bacilli and those of weak virulence.[13 14] To discover and, if possible, utilize this relative protection for passive immunity in the treatment of tuberculosis is the aim of research to-day.

Much interest clings to the nature of the tuberculin reaction, and many theories have been held concerning it. That of Koch, which assumed a direct necrotizing action on tuberculous nodes; of Hertwig,[15] that ascribed it to chemotaxis; of Eber,[16] to "heightened cell energy"; of Buchner,[17] Rosenbach[18] and Charrin[19] to "latent inflammation" and fever susceptibility; of Klein,[20] solely to mixed infections; of Arloing,[19] to weakening of the tubercle, and increase of secretion by the bacilli; of Liebmann[21] and Ribbert,[22] who thought the bacilli were increased in potency, have all been abandoned or modified with further study and the discovery of analogies. The later assumption of Bâbes[23] and Proca that it is a process of fermentation or enzyme activity excited by tuberculin is more in line with our present knowledge.†

A long list of substances is now known to produce, like tuberculin, local and general reactions in tuberculous subjects, and similar general disturbances with fever in healthy persons when large doses are employed.

In general they are digestion products, such as albumoses and their ferments; also certain alkaloids, such as physostigmin, pilocarpin, atropin; certain acids, as cinnamic,[25] cantharidin, and especially nucleic acids and their combinations as found in bacterial proteids,[17] and finally abrin, ricin and similar irritant bodies.

Their nature, taken in connection with our most recent knowledge of the chemical composition of tubercle bacilli and of bacteriolytic powers of serums, is to me highly suggestive of the ferment or enzyme theory propounded, and to some degree experimentally supported by Bâbes and Proca[23] to account for the tuberculin reaction. (See also Hahn.[9]) I may be permitted to present it with modifications to fit the times somewhat as follows: Tuberculin and allied irritants cause leucocytosis, or at least stimulate the secretion of ferments by leucocytes and other cells, particularly those which surround the bacilli as a wall. This ferment attacks both the injected irritant and the similar poisons that have been slowly accumulating in the tubercles during the life cycle of the bacillus. The general fever reaction now comes on because of the toxin set free, altered by or combined with the enzyme. The reactions are not produced in very recent tubercles nor earliest stage of tuberculosis because there has been no time for storage of toxin, which begins when the bacillus ceases to grow or dies, and because the organism as a whole has not developed susceptibility to this class of poisons, or power to attack them. The local and general reactions become less and less as more tubercles are exhausted of toxin, while the dose required to produce them increases because of less toxin in the tubercles, and also because of the now lessened sensitiveness of the whole organism, or toxin immunity.

Inoculations of sterilized bacilli produce tubercles and susceptibility to tuberculin reaction. Hence, for the purpose of this argument, both living and dead bacilli may be considered simply as chemical irritants which the defensive mechanism of the animal strives to disintegrate and excrete. The bacillus being markedly resistant because of difficultly soluble fats and irritant nucleobodies in its substance, this effort fails in part and leucocytes and other cells hedge it in to form the tubercle. The nearest cells imbibe or slowly dissolve out the soluble toxin or suffer death in the attempt. In either case the process of digestion or enzyme action is too slow to effect a marked local or general disturbance unless there are present a sufficient number of tubercles of the same age, or unless tuberculin and similar exciters are used, or there are accompanying infections that cause an increase of leukocytes and thus more enzyme action.

This hypothesis satisfactorily accounts for many phenomena clinically and experimentally observed in tuberculosis and tuberculin action, and gathers force from the recently strengthened theory of Buchner,[26] that bactericidal and bacteriolytic or dissolving properties of serums are proteolytic enzymes secreted by various cells, but pre-eminently by leucocytes. The agglutination of tubercle bacilli by serums from tuberculous patients has been claimed by Arloing and Courmont,[27] and while this may not be a wholly specific property, it indicates the presence of some anti-body allied to those in bacteriolytic serums. If then we may assume that tuberculin acts as a spur to the functions of defence, we can easily apprehend the danger of overstimulation and harm from too large and frequent dosage, or when used on patients with poor nutrition or already over-poisoned by their malady. Likewise the severe local reactions, particularly in the lung, could cause new foci by washing out the bacilli. While this may have occurred during the tuberculin craze, I believe that all trustworthy advocates of tuberculin therapy to-day, after years of observation, think that no recognizable danger exists when the violent reactions are avoided and proper cases are selected.

Whether or not tuberculins of any sort should be favored for limited therapeutic employment in the light of our present knowledge, I will not presume to decide, but that they can favorably influence a pure, localized pulmonary tuberculosis, and lupus, in a well-nourished and afebrile patient, seems to me sufficiently proved by clinical experience coupled with animal experiments. Obviously their use should be confined to institutions, and the patients observed through a series of years.

The experience of Petruschky[28] is valuable in showing the necessity for repeated injections of tuberculin with long interruptions in order to attain an absence of reaction susceptibility to test doses. This he regards (and to my mind with some reason) as a criterion of the complete cicatrization of all the tubercles (though not of the death of all bacilli in them). How far such a criterion may hold good depends upon how much an acquired toxin immunity from the previous injections may have to do with it, but it is safe to say that the latent tuberculosis in a person in apparent good health, that will not react to a full diagnostic dose of tuberculin, should cause no anxiety. The few

† It is somewhat unfortunate that our ideas of the reactions and dosage should have been based on the use of the original tuberculin, since it is a crude mixture, including albumoses and peptones from the culture medium which by themselves produce reaction, supplementing that produced by the bacillus extract proper.

patients who have stood the test of time and tuberculin after long intervals are alone those of value in a clinical estimate of the curative influence of tuberculin in the sense above mentioned (complete cicatrization of foci).

It appears uncertain that tuberculins can do any more for the local process in aiding cicatrization or absorption of tubercles than other leucocyte irritants, such as cinnamic acid [28] and nucleins; but if a certain degree of toxin immunity can be produced by the new tuberculins it is more rational to employ a specific irritant. Considering the difficulty and danger of producing even comparative immunity by the use of tuberculins the question is practically resolved to this: Can we safely aid nature to advantage in her attempt to hem in and destroy the tubercle bacillus and its products by medication that increases the hyperemia and absorption from tuberculous nodes? I think it is reasonable to affirm that we can within narrow limits.

The successful treatment of tuberculous joints by combined active and passive hyperemia (Bier's [29] method), the complete absorption of tubercles from the peritoneum after simple laparatomy, due to reactive hyperemia (Hildebrandt [30]), and the same result in lupus from tuberculin, x-ray, and other methods producing inflammation, are certain indications that it is rational so far as they can be applied to pulmonary tuberculosis.[31] A more attractive subject for consideration is serum therapeutics in tuberculosis, which is in an experimental stage at present. A great variety of relatively immune animals and birds have been utilized in the search for an antituberculous serum without practical success. On the other hand, Maragliano [32] and de Schweinitz [14] have attained some prolongation of life in tuberculous guinea-pigs with the serum of horses injected with bacillus toxins. The serums have been and are being used clinically with greater or less claims for success.

Paterson [33] and Behring [34] found antitoxic properties in certain bird-serums, and de Schweinitz [14] and Behring [34] in tuberculous cows treated with toxins. These were found unsuited for use on human subjects because of irritant properties. Maffucci and Vestea [35] obtained prolongation of life in guinea-pigs with serum of toxin-treated sheep, but as it produced fever it was thought to contain tuberculin, and its activity thus accounted for. The antitoxic properties of the serums of Maragliano and Behring were assumed to be demonstrated by the inhibition of a tuberculin reaction in a human subject, and prevention of death from a fatal dose of the toxin in healthy guinea-pigs. None have so far been proved bactericidal or immunizing, and the evidence is yet unsatisfactory (see Trudeau and Baldwin [36]) as to the much-wished-for antitoxic power, which is at least so weak as to be unappreciated when measured by its immediate influence on the fever of tuberculosis patients. Thus far no tissue has been found to have an especial affinity for the bacillus toxin as in tetanus and diphtheria. This may be the reason that we have such slight evidence of the presence of a strictly antitoxin body.

It might be expected from what has been learned about the mechanism of the tuberculin reaction that a bacteriolytic property might be obtained in serums or tissue extracts of immunized animals. If present, the practical value of such a serum might be limited by its inability to get at the bacillus in the caseating tubercles, unless, like laparotomy in tuberculous peritonitis, it could cause their complete absorption. The whole subject is being studied earnestly for more light on these problems, and we may not lose hope for results of practical value.

REFERENCES.

1. Park, W. H. Bacteriology in Medicine and Surgery, 1899.
2. Lustig and Galleotti. British Medical Journal, February 10, 1900.
3. Wright and Leishman. Loc. cit., January 20, 1900.
4. Lambert, Alex. Journal American Medical Association, April 14, 1900.
5. Loewenthal. Deutsche med. Wochenschrift, Nos. 43-44, 1898.
6. Koch, R. Loc. cit., No. 14, 1897.
7. Klebs, E. Die causale Behandlung der Tuberculose, 1894.
8. Hunter, Wm. British Medical Journal, July 25, 1891.
9. Hahn, M. Münch. med. Wochenschrift, No. 48, 1897.
10. Maragliano, E. Berl. klin. Wochenschrift, No. 18, 1899.
11. Behring, E. Loc. cit., No. 25, 1899.
12. Beck, Max. Deutsche med. Wochenschrift, No. 23, 1898.
13. Trudeau, E. L. British Medical Journal, December 25, 1897.
14. De Schweinitz. Transactions Association American Physicians, 1897; Bericht über den Kongress zur Bekämpfung der Tuberculose, etc., Berlin, 1899.
15. Hertwig. Ref. Baumgart. Jahresber., 1891.
16. Eber. Ref. Central. f. Bakt., etc., xix, 16-17.
17. Buchner, H. Münch. med. Wochenschrift, No. 49, 1891.
18. Rosenbach. Loc. cit., No. 8, 1891.
19. Arloing, Charrin. Ref. Bâbes and Proca, Archiv f. Hygiene u. Infectionskrankheiten, Bd. xxiii, Heft 3.
20. Klein, A. Beit. z. klin. Med. u. Chir., No. 2, 1893.
21. Liebmann. Virchow's Archiv, Bd. cxliv, suppl.
22. Ribbert. Deutsche med. Wochenschrift, No. 16, 1892.
23. Bâbes and Proca. Archiv. f. Hygiene u. Infectionskrankheiten, Bd. xxiii, Heft 3.
24. Krehl and Matthes. Archiv f. exper. Anat. u. Pharm.
25. Landerer. Treatment of Tuberculosis by Cinnamic Acid, 1898.
26. Buchner, H. Münch. med. Wochenschrift, Nos. 39, 40, 43, 1899; No. 9, 1900.
27. Arloing and Courmont. Congrès d'étude de la Tuberculose, 1898.
28. Petruschky, J. Berl. klin. Wochenschrift, December 18-25, 1899.
29. Bier. Münch. med. Wochenschrift, Nos. 48-49, 1899.
30. Hildebrandt. Loc. cit., Nos 51-52, 1898.
31. Jacoby. Loc. cit, Nos. 8-9, 1897.
32. Maragliano. Revue de la Tuberculose, No. 2, 1898.
33. Peterson, P. Lancet, October 30, 1897.
34. Behring, E. Deutsche med. Wochenschrift, No. 19, 1898.
35. Maffucci et Vestea. Central. f. Bakt. u. Parasit., Bd. xxv, No. 23, 1899.
36. Trudeau and Baldwin. American Journal Medical Sciences, December, 1898, January, 1899.

THE RELATION OF BACTERIOLOGY TO MEDICINE.[1]

BY RICHARD C. CABOT, M.D., BOSTON,

Assistant in Clinical Medicine, Harvard Medical School: Physician to Out-Patients, Massachusetts General Hospital.

By the terms of the subject assigned to me, the parasite of malaria and the question concerning the parasitic origin of malignant new growths are excluded from discussion, since the organisms concerned in those diseases are not classed as bacteria.

Bacteriology has relations with every department of clinical medicine.

With (*a*) Etiology.
" (*b*) Diagnosis.
" (*c*) Symptomatology and the course of disease.
With (*d*) Prognosis.
" (*e*) Treatment.

ETIOLOGY.

Through bacteriology we have been enabled to determine practically with certainty the causes of the following diseases:

[1] Read before the Fifth Congress of American Physicians and Surgeons, held at Washington, D. C., May 1, 2 and 3, 1900.

I.

Diphtheria,	Asiatic cholera,
Tuberculosis,	Relapsing fever,
Bubonic plague,	Influenza,
Tetanus,	Gonorrhea,
Anthrax,	Glanders.

Erysipelas and the various diseases due to pathogenic streptococci and staphylococci.

Actinomycosis.

Typhoid.

I have put typhoid last in the list of diseases of whose cause bacteriology has made us certain because it is only since 1897 that the typhoid bacillus has obtained so secure a position through the introduction of Widal's agglutination test. Previous to that discovery the typhoid bacillus was regarded as very probably the cause of typhoid fever, but not as occupying as secure a position as the bacillus of anthrax or of diphtheria.

II.

Next to the above group of diseases, we may arrange those regarding whose connection with a well-identified micro-organism we are but slightly less firmly convinced.

(*a*) Epidemic cerebrospinal meningitis (diplococcus intracellularis of Weichselbaum).

(*d*) Croupous pneumonia (micrococcus lanceolatus).

III.

Among the diseases whose bacterial cause is *probably* identified are:

(*a*) Malta fever (micrococcus melitensis of Bruce).

(*b*) Meat poisoning — certain epidemics — (bacillus enteritidis of Gärtner and allied species).

(*c*) Epidemic tropical dysentery (Shiga's bacillus).

(*d*) Leprosy (Hawsen's bacillus).

IV.

Regarding the bacteria believed by some to be causally connected with the following diseases we are at present *in doubt*.

(*a*) Whooping-cough.

(*b*) Yellow fever.

(*c*) Syphilis (Lustgarten's bacillus).

(*d*) Cystitis and cholangitis (colon-bacillus infection in certain cases).

(*e*) Soft chancre (Unna's bacillus).

V.

Finally we may make a list of bacilli probably pathogenic under certain conditions, but not constantly associated with any well-defined group of *clinical* manifestations. Such are the:

(*a*) Bacillus pyocyaneus.

(*c*) Bacillus of malignant edema.

(*d*) Bacillus of Friedländer (ozena, lobular pneumonia, etc.).

DIAGNOSIS.

Bacteriology is in the closest relations with clinical medicine through the help it gives us in clinical diagnosis. Such assistance is given

(*A*) Through the demonstration of the bacilli themselves in secretions or in the products of disease.

(*B*) Through the agglutination test,

(*C*) Through the injection of soluble products of the growth of certain bacilli (tuberculin mallein).

A.

So far only two or possibly three such bacteriological tests can be said to be in general use throughout this country, namely:

(1) The search for the tubercle bacillus in sputa.[2]

(2) The search for the diphtheria bacillus in the throat, and possibly

(3) The agglutination test of typhoid.

Other such aids to diagnosis which seem likely to come into more general use are the examination of

(*a*) *The blood* — blood cultures in pyemia, malignant endocarditis, bubonic plague, pneumonia, gonorrheal septicemia).

(*b*) *The sputa* — for the influenza bacillus, plague bacillus, and micrococcus lanceolatus.

(*c*) *The urine* — for the bacilli of typhoid and tuberculosis.

(*d*) *The feces* — for the bacilli of typhoid, tuberculosis and cholera.

(*e*) *Cerebrospinal fluid* — for the diplococcus intracellularis, tubercle bacillus, and mucococcus lanceolatus.

(*f*) *The urethral, vaginal and uterine secretions* — for gonococci.

(*g*) *The nasal, pharyngeal and conjunctival secretions* — for influenza or diphtheria bacilli, bacillus of Friedländer, bacillus of Weeks.

B.

THE AGGLUTINATION TEST.

(*a*) Next to typhoid, Malta fever seems at present the disease in the diagnosis of which we are most helped by the agglutination test.

(*b*) In the recognition of the true nature of certain obscure fevers, Durham believes that the serum test with the bacilli most frequently concerned in meat poisoning (Gärtner's bacillus enteritidis) is destined to play an important part.

(*c*) The diagnosis of relapsing fever between the paroxysms, once difficult or impossible, is now possible by the use of a reaction akin to the agglutination test.

(*d*) Well-marked agglutination reactions have been constantly observed in leprosy, bubonic plague, Asiatic cholera and tropical dysentery with the bacilli of these diseases. Just how much practical use is as yet made of these tests I am unable to say.

To other diseases the diagnostic assistance of the agglutination reaction has not extended. Individual observers have reported success in the attempt to apply the serum test to the diagnosis of tuberculosis and croupous pneumonia, but confirmation is lacking.

AID GIVEN TO BACTERIOLOGY BY CLINICAL MEDICINE.

To a limited extent we are able to reverse the use of the agglutination test. Instead of using a well-identified bacillus to test the body fluid of a doubtful case, we can use the body fluids of a well-identified case of disease to test a doubtful bacillus. In identifying doubtful cultures, M. W. Richardson uses slips of filter paper soaked in the blood obtained at autopsy from a case of typhoid. Durham has used similar tests in differentiating the flora of the intestine.

[2] In examining sputa from cases of gangrene of the lung, it should be remembered that the smegma bacillus may occur in such cases, and be mistaken for the tubercle bacillus if decolorization with absolute alcohol is not attempted.

C.

Of the diagnostic use of tuberculin it is only necessary to say that despite the warnings of Virchow it has passed into general use and deserves to be utilized much more widely still. The few who object to its use are for the most part those who have not tried it. The use of mallein is well established.

SYMPTOMATOLOGY AND COURSE.

(1) Bacteriology is rapidly bringing about a regrouping and rearrangement of those clusters of signs and symptoms by means of which we have been accustomed to recognize the entities called "diseases." Previous to the development of bacteriology we thought of acute pneumonia as a single well-defined disease. Now we know that there are many kinds of pneumonia. The pneumonia due to the micrococcus lanceolatus differs in many respects from pneumonia due to the streptococcus pyogenes, to the plague bacillus, or to Friedländer's bacillus. Such differences are clear on the post-mortem table and we are beginning to recognize clinical types corresponding to them.

I cannot help hoping that such differentiations will help us to clarify the turgid sentences in which perforce our symptomatology is now expressed. When I read symptomatology, and still more when I attempt to write it, I am at times inexpressibly depressed by the wearisome occurrence of such phrases as "sometimes," "not infrequently," "in certain cases," etc. "Sometimes pneumonia ends by crisis — sometimes not." "Peritonitis sometimes caused distention of the abdomen, sometimes retraction." "Why?" asks the intelligent student and there is no answer.

Now if we could say (as I hope before long we can): "Pneumonia when due to the micrococcus lanceolatus ends by crisis, when due to the streptococcus by lysis" — what a godsend it would be! How much more scientific, how much less by the weather predictions of the Yankee fishermen our text-books of medicine would sound!

(2) Again by showing that one species of bacteria may set up disease in the brain, the lung, the endocardium and the peritoneum, bacteriology has suggested that what we now separate as various diseases — meningitis, endocarditis, peritonitis should properly be brought together under the heading of "pneumococcus infections." Influenza, tuberculosis, gonorrhea and typhoid already occupy such a position. Influenza is still influenza whether it attacks the upper air passages, the gastro-intestinal tracts, or runs its febrile course without any recognizable local manifestation. The recent report of the Bombay Plague Commission manifests an advanced form of the same tendency when it specifies no less than ten forms of infection by the plague bacillus at least, as different from each other as are the different manifestations of the micrococcus lanceolatus in various organs.

(3) The interesting subject of combined bacterial infections is too extensive to be treated in this paper. But it is evident that our conceptions of the symptomatology of pulmonary tuberculosis have been greatly clarified since we began to distinguish the symptoms due to mixed infection with pyogenic cocci or with influenza bacilli from those due to the activity of the tubercle bacillus alone.

PROGNOSIS.

Statements regarding prognosis are apt to present an unrivalled material for the study of the art of *hedging*.

Bacteriology is helping us to make our prognoses less meaningless. The following examples are in point:

(*a*) When pneumococci can be demonstrated in the blood of a case of pneumonia, a fatal termination is almost certain.

(*b*) When the spirochetes of a case of relapsing fever are rendered motionless within one hour by the blood of another patient who has passed through one paroxysm and is expecting another, no second paroxysm will occur, while if the spirochetes are not quieted within two hours another paroxysm is sure to follow.

(*c*) Empyema due to the pneumococcus is likely to heal after relatively rapid tapping, often without permanent drainage.

TREATMENT.

(*a*) *Antitoxic or protective sera.*

The subject is so familiar and well worn that I will simply classify the various antitoxic sera according to the best current opinion of the efficiency.

I.

Markedly curative.

Antidiphtheritic serum.
Antispirillum serum (relapsing fever).

II.

Efficient as protective.

Anticholera serum.
Antiplague serum.

III.

Limited utility in selected cases.

Antitetanus serum.
Koch's tuberculin.

IV.

Doubtful but hopeful.

Antityphoid serum.
Antidysenteric serum.

V.

Probably inert.

Antistreptococcus.
Antipneumococcus.
Anti-amarillic (yellow fever).

(*b*) Under a slightly different heading comes the treatment of inoperable cases of malignant disease by the injection of the toxin of erysipelas, which appears to have a distinct though very limited field of usefulness.

RELATION OF THE CLINICIAN TO THE BACTERIOLOGIST.

The Municipal Laboratory of the City of Boston now offers to examine for physicians material suspected of coming from any of the following diseases: Typhoid, tetanus, tuberculosis, diphtheria, malaria, glanders, gonorrhea, influenza.

Now, as a citizen of Boston, I take great satisfaction in knowing that we have such a municipal laboratory, and that our physicians can and do avail themselves of it. Yet I am sometimes appalled when I see

how innocently, how literally, how trustfully, physicians accept the verdict of the laboratory as decisive. I have been amazed to see how my own laboratory reports at the time when I was doing such work were accepted as final, and used as foundations on which to build an extensive superstructure of diagnosis, prognosis and treatment. No one who has ever done much laboratory work ever accepts the report of another in such a spirit, for he knows from experience

(*a*) The chance for error in the laboratory (from confusion of specimens, deterioration of cultures, or culture media, etc.).

(*b*) The difficulty of interpreting the results of bacteriological investigation, or of understanding just how decisively the bacteriologist intends to speak on the point in question.

(*a*) The bacteriologist knows that some of his verdicts are relatively final — other less so, and more subject to modification, according to various other circumstances. He knows when his technic has been above suspicion, and when (either from the condition of the material furnished him, or the nature of test attempted) his results are to be taken less seriously. All this the bacteriologist knows — but the clinician frequently does not. Hence arise errors and misunderstandings, which not infrequently drive the clinician to an utterly unreasonable distrust of *all* laboratory results.

(*b*) Few clinicians realize how difficult it is to interpret the results of bacteriologic examinations. For example, to draw the *properly limited inference* from the announcement of a positive Widal reaction; to be enough, and not too much, alarmed by a positive reaction to tuberculin, or by the finding of Klebs-Löffler bacilli in a patient's throat.

Especially is this true where relatively indefinite quantitative expressions enter into the bacteriologist's report. Only he who makes the test can really appreciate what is meant in a given case by such phrases as "Very numerous tubercle bacilli, very virulent streptococci, very motile organisms, very numerous malarial organisms, etc."

In view of these facts I believe that we get the greatest help from bacteriology only when the bacteriological tests are made by the clinician himself or by some one (for example, his private assistant or interne) who is familiar with the clinical aspects of the case in question. Otherwise, the wisdom of the laboratory and the wisdom of the bedside often fail to connect with and to re-enforce one another.

Bacteriological evidence on clinical cases cannot be passed from hand to hand without damage; the truth as the bacteriologist sees it is not the same truth which the clinician receives through the medium of a written report. The journey from mind to mind has modified it — sometimes transformed it into something very like error.

THE SOCIOLOGICAL STATUS OF THE PHYSICIAN.[1]

BY CLARENCE JOHN BLAKE, M.D., BOSTON.

IN the very beginning of his studies the medical student is brought into investigatory relationship with that which he has heretofore thought of as an entity, a being, a mystery, and which, now put into his hands for demolition, he finds to be a most wonderful and delicately constructed machine, in the study of which he may be said to pass through much the same process of mental evolution as that attributed by Professor Giddings to primitive man.[2]

He is lost in marvel at the compact arrangement of muscular tissues, regards as might the explorer of a buried city the system of canals which carry quickening fluid to the outermost circumvallation and of drains into which are cast waste matters to be discharged without the walls; while the glistening white lines of nerves sending their branches in a network between muscles and under and over canals and drains reveal to him the suggestion of a system for the communication of intelligence and the issuance of governing mandates to which the combined telegraphic and telephonic services of the greatest city built by human hands have no comparison in relative extent or in perfection.

There is probably no point in his career of so much initial portent as that in which the student in the dissecting-room for the first time lifts the wet sheet from a face that he has never known, but behind which there dwelt and through which there have been expressed all that emotion and desire can crowd into the compass of a human life; it is a period in which he either consecrates himself or turns back; if he be honest he does one or the other; if he be a pretender he may, it is true, continue and complete his medical school course and go out into the broader school of work, but without the consecration he will inevitably fail of his highest possibilities as a physician. The impress which is made by the study of anatomy upon the truly thoughtful man cannot but be emphasized in the physiologic laboratory where the student learns the values and uses of the different parts of the human machine and finds the answers to questions which the previous study of the structure of the silent body have evoked. Here and in the associated laboratories, he learns the chemical processes of the body in health and disease, the supplementary relationship of the different organs, the provision for their maintenance and repair, and comes to recognize and to know the functions of the microscopic organisms with which the body teems. Carrying with him the lessons born of research, he next passes into the wider school of clinical teaching and learns at the bedside that he has to study something more than the disease and that to render the fullest meed of service as a physician he must come to know, patiently, tenderly and, in the broadest sense, sympathetically his brother man. Here, too, he learns that his own feelings and emotions must be subordinated to the one purpose of his greatest help — efficiency; that here, as in all scientific work, his personal equation must be reduced to a minimum and that he must lose himself in the effort to think wisely and judge well for others.

In former times, not very many years ago, the bedside teaching was provided under a system corresponding to that of apprenticeship in trade and the student gained his clinical experience through association with some active general practitioner; but to-day, with the aggregation of population in cities and the consequent establishment of hospitals, these institutions are made to furnish the clinical material necessary for instruction, thus fulfilling one of their important obligations to the community which supports them; for, while

[1] Abstract of Address delivered before the Fifth Congress of American Physicians and Surgeons, held at Washington, D. C., May 1, 2 and 3, 1900.

[2] F. H. Giddings: The Principles of Sociology, Anthropogenic Association, p. 246.

the first purpose of the hospital is to provide for the care of the sick, no such institution does the just measure of its work unless its benefits extend beyond its walls through the education of those whose lives are to be pledged not only to a warfare against disease, but to an effort toward its prevention.

From an economic standpoint the hospital may be defined as an institution in which capital and skilled labor combine to provide such members of the community as are temporarily disabled and without means of support with the maintenance and care which shall fit them to become again self-supporting and active community factors. It is a free repair shop for human machines, and the capitalist who contributes to its support does so with the basal, though perhaps not with the defined, understanding that his contribution is returned to him, through the community, in the lesser number of incapacitated and dependent machines, while the physician who furnishes the skilled labor contribution finds his return not only in the same manner as the capitalist, but in the opportunity which is given him of fulfilling his duty to humanity with less expenditure than if he did it at his own charge and with better effect, under conditions which inure greatly to his own well-being and usefulness. But the hospital of to-day is something very much more than a mere repair shop; it is a school full of object lessons in the application of those qualities which are the uprights, the girders and the binding rods of the modern social structure; in the first place, it is the most absolutely clean of all human habitations and the present splendid successes of surgery in the amelioration of suffering and the preservation of life are due not only to the application of trained skill and intelligence, but to its operations under conditions of absolute sterilization which are microscopic in their minutiæ.

Not only is the hospital a lesson in physical cleanliness but, if justly administered, it is morally clean as well, for so important is its service, so often does the issue of a life depend upon the observance of some apparently minor detail, that its work must be done under the strictest discipline; order, obedience, alertness and complete devotion to the duty in hand must be commanded within its walls. Under such responsibilities the position of superintendent of a hospital is a serious one, calling for administrative ability of no mean order. Gradually with the growth of urban hospitals these posts have come to be filled by selected men, who, from previous education along other than medical lines, or from training in the hospitals themselves, have acquired the ability to deal with questions of structure, repair, lighting, heating, ventilation, equipment, food supply and the details having to do with a housekeeping for hundreds of patients and nearly half that number, the usual ratio, of medical house officers, nurses and attendants.

Many hospitals are administered by women who have had their preliminary training in such institutions as nurses; women are also supplementing the general administrative work as superintendents of hospital training schools for nurses. The entrance of women into hospital life and work is one of the sociological advances for which the medical profession is mainly responsible, a responsibility having a serious ethical, as well as an important economic, side. Under present conditions the training schools furnish to the hospitals a much better service than could otherwise be obtained, one which has contributed much to the precision and fidelity of the work done, and which has moreover exercised a general beneficial effect upon the *morale* of the patients.

The course of study of the hospital-trained nurse is a severe one, usually of two years' duration, but now being lengthened to three and four years; the woman who enters upon and continues in it has a liberal education in the deterrent side of human life and, if she graduates well, comes out of the hospital to enter individually upon a vocation in which she is likely to find herself set apart from the society about her, even more than is the physician. For while the physician has his medical societies and other social relationships with his fellows, the nurse has only the affiliation with her training school and hospital; that she often finds it difficult to cope with the competition in her profession and the discomfort of an uncertain income is shown by the tendency to re-enter institution life among nurses who have been in private practice, even at moderate salaries. The trained nurse has now been in existence, as a community factor, a sufficient length of time to make statistical estimates possible, and it appears that the active professional life of the nurse, outside of institutions, is covered by an extreme limit of fifteen years, and that her average annual income is that of the average woman teacher. The teacher has a regular stipend, allotted hours of work and a definite holiday; the nurse in private practice has no regular stipend, no protracted leisure and leads an economical, irregular life, with occasionally extraordinary demands upon her strength and powers of endurance. The medical profession, which has created the trained nurse, to its own great advantage and with considerable extension of its helpfulness, owes a debt which should be acknowledged not only individually but generally. The provision for lodgment of nurses in separate buildings where they may, when off duty, have the comforts of a home is a step in this direction; here also the training in the hospital is supplemented by instruction in housekeeping, purchasing, and diet-kitchen work, and the nurse thus educated who goes into private practice and becomes temporarily the member of a household does so with a better knowledge of the perplexities which may beset the housemother when illness cuts across the line of home affairs.

Another question which is coming to the front is that of the establishment of co-operative training schools, in which a nurse, having served her probationary period and a year or more in one hospital, is passed on to a second and third hospital, either of a different class or in another city, returning to the first hospital for her final service and graduation. Under this plan the nurse, admitted only on an entrance examination and first trained in a general hospital, would continue her studies in a lying-in hospital, a children's hospital, some special hospital and in a hospital for contagious diseases, and the higher educational standard required of applicants, the length of the course and its completeness, would tend not only to furnish a better class of women, more competent to succeed in private practice, but would also help to prevent that overcrowding of the nursing profession already apparent.

Leaving now the hospital, a term here meant to include asylums, convalescent homes and similar institutions which are his particular province, and passing

over questions, interesting in themselves, in regard to the working relationship of medical staffs and boards of managers, let us consider other directions wherein the physician finds opportunities for the acknowledgment of his citizenship.

The medical supervision of public schools of recent inauguration, demanded as a necessity in view of the opportunity afforded for the spread of contagious diseases through the medium of these aggregation centres, is opening the way to a much larger sociological service than was at first expected of it, for where medical inspection has been fairly established the examiners find themselves confronted with questions of the proper seating of school children, of the provision of school lunches, of proper lighting, ventilation and sanitary accommodations and of the detection and setting aside for compensatory educational advantages children whose defective sight or hearing puts them below the average of their fellows. It is in schools for the defective, however, that the doctor finds his especial work, and the generous provision now made for the care of feeble-minded and backward children, the blind, the deaf, and latterly the crippled, gives him a large opportunity for elucidative study leading toward the betterment of the condition of those whose inheritance or personal misfortune have made them a charge upon the community, not only for assistance but for encouragement toward turning their moderate capital in life to the best account.

The distinction between lack of perceptive capacity and lack of sense transmission is frequently represented only by a thin and shadowy line, and the partition classification of dependent and imperfect children is often one of the most exacting of the moral responsibilities of the doctor. Children who are regarded as backward, or even idiotic, are sometimes found on careful examination to be merely creatures shut within themselves by the closure of normal channels of communication, and the bringing of such children into touch, through the education of their tactile sense, with the human companionship which makes life worth living is worth far more than all it costs in time or effort. In such cases as these the child has virtually no desultory memory, all impressions received come mainly through one channel and the memorizing capacity is in proportion to the concentration effort in reception; the nervous energy of the child, moreover, instead of being expended in an effort at reception through several sense organs, is limited to a distinctively volitional one and, in place of being used in the elaboration of different methods of expression, is devoted almost solely to perception. The intelligence, slowly educated by an expenditure of effort on the part of the child, is, reactively, constantly increasing the perceptive power, so that when, through the utilization of a quickened tactile sense, new forms of expression are afforded, the concentrated nervous energy bursts its bounds in a flood of questions, and there is no fairyland imaginable which will compare in its wonders to that into which such a child is admitted through the educational portals of the kindergarten for the blind.

The first attempts at the education of the so-called deaf mutes, but mutes only because of the lack of hearing and of training, began naturally through the medium of the signs and gestures which these unfortunates substituted for the inadequate utterance of which some of them were capable. While succeeding in imparting a good education, through the medium of the manual and gesture language, this method created a class set apart by itself because of its inability to communicate through any other medium than that of writing with its hearing and speaking environment. The recognition in an educational process of so serious a defect as the creation of a distinct class in the community, subject to the temptation of intermarriage and the consequent possibility of class perpetuation, together with a better knowledge of the fact that many of these people had an amount of hearing power sufficient to enable them to perceive sounds which they themselves made, brought about the gradual introduction into the manual schools, of a system of voice-training and lip-reading, which has so far gained ground as to lead to the establishments of schools devoted exclusively to this method. The growth and progress of schools for the deaf in the United States since the establishment of the first school in 1817 may be judged from the fact that the twelve original pupils at that date have now increased to almost ten thousand, in over eighty schools, and that very nearly half this number of pupils are being taught articulation.

With the progress of a method of education which is ultimately destined in the main to prevail, since it is in the line of that sociological advance which seeks to make and keep each unit a viable member of the community, a more precise determination of the amount of hearing possessed by each pupil and the possibility of its improvement becomes a matter of great importance. Under the auspices of the National Association of Teachers of Speech to the Deaf, acting in co-operation with one of the bodies forming this Association, the American Otological Society, a systematic examination of all pupils in schools for the deaf throughout the United States has been undertaken. The purpose of this investigation is to provide not for what might be called a census-taking, but for the establishment of continuous special medical examination of the pupils, firstly, for their immediate advantage, and, secondly, to make records upon a uniform basis suitable for comparison and tabulation. The work, already begun as a preliminary investigation in the Horace Mann School in Boston, shows that out of 150 children, set apart by their infirmity and specially educated, fully eight per cent. are capable of being restored to an amount of hearing which will enable them, in some instances with the help of artificial aids to hearing, to take their places in the society of people of normal average hearing, while still others, to the extent of an additional five per cent., can be so far improved as to be materially aided in their power to acquire well-modulated articulation. Between 10 and 15 per cent. of these cases, in addition to those already mentioned, are found to illustrate the truth of the saying that disuse is abuse, for in them it is possible, by means of speaking tubes and other appliances for the direct communication of sound to the perceptive organs, to awaken what may be called, for want of a better term, the latent hearing and make it, if not a means of communication of consecutive thought, at least useful for improvement of the articulation. With the continued prosecution of this investigation there is opened a large field for the study of the causes of high grades of deafness in young children and one leading to better knowledge of possibilities of prevention.

A recent effort at compensatory education follows lines laid down nearly seventy years ago in Bavaria,

and since extended to other countries in Europe, finding its most marked success in Italy.

Five years ago there was opened in Boston a charitable institution which deserves more than passing notice for the comparative novelty, as well as the value, of the work undertaken, and for the promise which it gives of extension. The Industrial School for Crippled and Deformed Children, beginning with 11 pupils in 1895, now with quadruple that number and a large waiting list, has served as a suggestion for the establishment of other institutions of the same or similar character in Milwaukee, Chicago and Baltimore. In New York a school of this kind is now projected and in Philadelphia Mr. Widener has recently given the sum of two million dollars, the income of which is to be expended for the care, educational and industrial training of cripples.

"Strange it is," says Dr. E. H. Bradford, the practical founder of the Boston school, in a paper not yet published, but from which I am permitted to quote, "that while in every civilized country the insane, the blind, the dumb, the epileptic and the idiotic receive careful attention, but little heed is paid to the education of the most deserving of all unfortunates, namely, the cripple. The cripple is left to the almshouse or allowed to remain in a back room at home idle, useless, petted, often the only wilful member of the family whose misdirected kindness aids in ruining his character; hampered by disease and deformed, he is doomed to the injurious influence of idleness. Crippled children can be grouped under two heads: those who are suffering from a chronic disease which, during their childhood, either prevents their attending school altogether or else where their attendance is interrupted or prevented because their feeble condition will not stand the fatigue of a school day adapted only for strong children. The majority of these, if they receive good care, good food, good air, under proper medical supervision, recover with more or less resultant deformity and, although handicapped as breadwinners, are eventually able to do something as workers; that is, if trained during their childhood may become skilled in sedentary occupations, but if uneducated are necessarily idle and useless. The second class comprises those permanently crippled either by congenital deformity or by paralysis. They can never recover from their ailment and are permanently excluded from the use of their legs or arms. Special instruction is needed for these and special avenues must be made for them for certain kinds of work which they can be taught to do with the aid of suitable apparatus designed for them. This class can be of use to the community in many instances, as their affliction frequently develops a concentrated ability in certain directions not found in more active or healthier persons. If they are unable to become producers to a large extent, yet in many instances they may be trained into workers contributing to their support. They are saved from the curse of idleness and in rare instances may develop unusual and useful talent."

To make provision for these two classes in a day school, it is necessary, or at least advisable, to furnish means of transportation under conditions favorable to the most helpless, and in the school itself there must be, in addition to the ordinary recitation and study rooms, rest rooms with reclining chairs or beds, rooms for the training of the pupils in various occupations, and a diet kitchen from which food may be dispensed. To meet these peculiar conditions the staff of teachers must be supplemented by a trained nurse and there should be regular medical visitors, preferably men, on service in orthopedic hospitals.

The census of 1890 gives as the number of feebleminded, both children and adults, in the United States as a little less than one hundred thousand; but one of the best authorities in the treatment of this class of dependents thinks that there are probably four to every thousand of the population, or a total of very nearly three hundred thousand. Of this number about one in thirty only are in institutions and the remainder are scattered throughout the community, some in their own homes, where they are the objects of solicitous care and affectionate regard, others, and the large proportion, in almshouses, in prison and on the road as tramps. Their number is apparently increasing; in 1860 there were six hundred to the million inhabitants, in 1890, fifteen hundred to the million; and they propagate their kind. With them are linked the variable and occasional criminals, as distinguished from the criminals having criminal trades, and about the borders of this realm of the unfit circulate the merely idle, the dissolute, the profligate and the debauchee.

The differentiation of these classes, the sorting out of this waste humanity, the utilization of what is good in it and the protection of that which is feeble and useless constitute one of the most intricate problems of modern social life. He who holds the key to a situation is in a measure responsible for the situation, and the key to this particular problem is in the hands of the doctor more than in those of any other citizen. He, more than any other, as a necessity of his education, has been brought personally into contact with the deficient; his active life is spent in drawing comparisons with a normal standard of which, if he is to do his work well, he must constantly seek to keep himself, physically, mentally and morally, an example.

It is evident that among the many lines of sociological activity prescient of the growing intelligence and increasing public conscience of the people, this work of analysis of human waste and of discrimination, out of which grows helpful suggestion, is particularly the province of the doctor. A medium of work of this sort should be commanded for the medical profession by the community; not that the medical profession is not already engaged in such work and does not find in it fruitful opportunities, but that to command is to sustain and to support, and the public could with advantage make the labors of the physician for the common welfare more possible than they are at present.

The experience which has led to the substitution in the hospital supported by private charity and in the municipal hospital of an educated and trained physician for the man of business or the politician as superintendent should serve the same purpose in our public institutions. The doctor is ready and willing, and the number of young medical men who would accept positions of this kind at moderate salaries, under conditions which would give them time and opportunity for studious work, is steadily increasing.

The popular idea of an almshouse is often very much that it is a place for the storage of decrepit bodies past usefulness, an institution paying an annuity in food and lodgment to such members of the community as have not had the fortune or the fore-

sight to provide for their inactive years. It is partly due to prevalence of this idea that institutions of this class have been public jetsam stranded on the shores of the current of community life, but, the stream of humanitarian progress increasing in volume and growing ever stronger in lifting them, they are coming to be regarded more as hospitals, administered more upon the hospital plan, and in several of the largest city almshouses of this country the changes which have taken place, to the betterment of the inmates, under the influence of a regular medical visiting staff, supplemented by salaried house officers and by trained nurses, is most gratifying and promissory of still better conditions.

The same influence is at work in the domain of penology, and prisons are everywhere steadily coming to be less punitive, more reformatory, and the indeterminate sentence is a recognition, not only of the possible good underlying apparent evil, but also of the fact that betterment of the physical condition, as well as of the mental point of view, is a necessary basis for a healthier morality. Dr. Coulston, of the Royal Edinburgh Asylum, illustrates the fact that purely mental and moral causes play but a small part in the production of insanity, as compared with causes bodily and physical, by the statement that of cases examined by him only 11.5 per cent. were due to mental shock, the remainder being the outcome of causes acting on the brain through the body, drink and dissolute living, faulty development, hereditary disposition and the like; furthermore he gives it as his opinion that the late epidemic of influenza caused more insanity than all the public and private anxiety in connection with the war with Africa. The weakness of will and the inability to sustain healthy mental exertion evident in asylums for the insane are found also, though in lesser degree, in houses of refuge, almshouses and prisons, and the parallelism of conditions of the mentally, morally and physically defective with the interchangeability of their classification are nowhere more compactly observable, more readily made subject of study, than in the public institutions departments of our great cities, with their shifting population passing from one institution to another, a pauper, a drunkard, a malefactor in succession, but always a public charge. These departments, classed in the civic roster with the department of public works as channels of expenditure, fiscal administration and possible political preferment, have come to be regarded, because of their humanitarian function, as fields for the exploitation of philanthropic effort. Worthy and commendable as this is and most welcome as opening the way to still better defined conditions, it fails of its fullest efficiency because it lacks the necessary foundation of accurate information in regard to the subjects with which it has to deal and, under the ordinary existing political conditions, fails of continuity of effort.

The care of the physically, mentally and morally sick is so very serious a part of the business of life, its judicious exercise so important to the welfare of the whole community, that it is best placed, unreservedly, in the hands of those whose training has fitted them for its obligations, and who have learned by repeated experiences that an emotion however good or an impulse however philanthropic, unexpressed in carefully considered and continuously beneficial work, sinks to the level of a personal gratification. The ideal institutions department is that which, removed entirely from political control, but still part of the city government, is adjusted and administered upon the hospital basis, bringing to its service, as does the hospital, the conjoint efforts of the man of business and the physician. The actual work is in the hands of a general superintendent or commissioner, a medical man of large experience and institution training at a salary enabling him to devote his whole time to the duties of his office; under him, as heads of sub-departments, salaried officials, among medical men and women and house officers, either senior medical students or recent graduates, holding positions the equivalent of those in general hospitals; the whole under control, both as to appointment, general management and expenditure, of a board of trustees, the majority physicians, and an unpaid visiting medical staff.

The existence of such an institutions department would mean the establishment of a biological station, which would be the means bringing the greatest benefit to its inmates and at the same time would be an educational centre from which would emanate, for professional and public information, deductions derived from conscientiously applied scientific observation.

Affiliated with the institutions department in cities is the department of police; through the police station pass a large proportion of the inmates of the city institutions, and under police supervision and inspection live the defectives with whom the medical profession could advantageously be brought into more recognizedly effective contact, either by medical appointments on police commissions or by the creation of medical bureaus as a part of police departments.

Such bureaus, in addition to rendering the professional services for which private practitioners or contract surgeons are usually employed, would provide responsible care and carefully trained investigation in cases of accident or violence, with correspondingly accurate records, and could be made to do valuable correlative work with the institutions, the police and the hospitals.

It has been said by the trainers of youth that they do not get from the doctor the help expected and needed in the inculcation of those lessons which teach the moral value and moral use of the human body and are the substructure of healthful living, but it is doubtful also if the doctor has as yet had his sufficient opportunity. The recent endowment in a large university of a professorship of hygiene, with the stipulated condition that the appointment shall bear with it the obligation of a closer relationship with the lives of the students, is an important and welcome step in this direction, and the chair so endowed might be made the centre of a department of civics.

Still another relationship which may be broadened beyond its individual phase is that between the doctor and the clergyman, and recent experiments based upon a proposition that the divinity student should have opportunities to see the practical side of hospital and other institution work under medical guidance are so promising as to lead to the serious consideration of making this a definite part of the regular divinity-school instruction.

It would be interesting to take up in detail other and various channels through which the doctor, because of the elaboration of modern community life, finds recognized opportunities for his outgo from the

unit to the mass — such, for instance, as questions of water supply and sewage disposition, food and drug adulterations, asylum and hospital construction, health and quarantine regulations, hygiene and physical training — and to cite illustrative instances; but enough has been said to emphasize the fact that his principal value to the community springs from his intimate knowledge of the personal needs of his brother man.

His sociologic status is the outcome of this distinctive privilege, and his recognition and proper use of it, as the teacher of the individual and as the exponent of the beauty and righteousness of cleanly, wholesome and useful living, make his first duty to society.

ADDRESS.[1]

BY H. C. WOOD, M.D., LL.D., PHILADELPHIA,
Professor of Therapeutics, University of Pennsylvania.

It is true that, as told in the historical introduction to the Pharmacopeia, there was published in Philadelphia, in 1778, for military purposes, a small pharmacopeia, but it was the counsellors of the Massachusetts Medical Society who, in 1805, first appreciated the need in America of a general pharmacopeia, and it was the result of their labors, issued in 1808, that suggested to Dr. Lyman Spaulding, of New York City, the formation of the "National Standard."

The dry bones of history, such as may be found in the opening pages of the United States Pharmacopeia, interest most of us but little, but when they are clothed with flesh and blood, it quickens heartbeats to see how near akin the men of the past were to the men of the present, and how, notwithstanding all change, the continuing brotherhood of the race reveals itself in the written lines.

In 1874, profoundly impressed with the rapid multiplication of medical books, and the phenomenal growth of medical literature, I wrote in opening the preface to my book on therapeutics: "Indeed, art is so long; life is so short, that every student has the right to demand of an author by what authority he doeth these things, and to challenge every memoir for its *raison d'être*." Judge of my surprise, when recently looking over the Pharmacopeia published by the Massachusetts Medical Society, to read among the first sentences, "Books multiply so fast that it has become necessary to preface every new work with reasons, indeed almost an apology, for its appearance." This in 1808, when America was little else than a wilderness; when, as we view the matter, neither medical journalism nor medical literature existed in the United States.

Very far from the truth is Tennyson's antithesis between the permanence of the brook and the momentary life of humanity; the fact is, that the stream of mankind flows on forever, as much as does the current of the brook; only as the drops of water in the brook change moment by moment, so do the drops come and go in the great human stream, and almost as like as drops are to drops, so is man to man. Hands from which had scarcely fallen the gauntlets of Puritanism wrote in primal New England: "It must not be understood that in adopting the modern language of botany and chemistry we have consulted the whims of every pretender. In this, as in former ages, men are creating confusion by creating names." Wise words are these, which the coming sub-committee on nomenclature of the United States Pharmacopeia should ponder a little more seriously than have their immediate predecessors. "In this, as in preceding ages, men are creating confusion by creating names." Applicable is this to all sciences, but most applicable is it in the purely natural studies, so-called, such as zoölogy and botany. Smith or Jones, or Thomson or Cope, written at the end of the name of an animal or plant fails not in its influence on human personality. I well remember with what glee and pride in the days of my callow youth, when I should have been under taskmasters learning methods and facts, I first saw "H. C. Wood" written after the name of a piece of fossil drift-wood from the coal fields of Pennsylvania. The boy is the father of the man. Unconsciously there remains in each one of us some capacity of enjoyment, such as was in the boy who, pointing to his name in the newspaper, said to his old aunt, "That's me." If the personal element could be withdrawn from the specific nomenclature of animals and plants, there probably would be much simplification. Let it be said of none of us that we have created confusion by creating names. Why must the poisoned American perish while we are searching our memories for ferri oxidum hydratum cum magnesia, when antidotum arsenicum might have saved his life, if only he had lived in Germany.

In the preface of the Pharmacopeia of 1808 it is interesting to find the germs whose subsequent growth has cost the members of this Convention and its committee so much labor. In accordance with the statement in the preface, "As there frequently arise errors of no small importance from the promiscuous use of weights and measures, it is proper that the quantities of substances, whether fluid or solid, be determined by weight." In accordance with this the framers of the first American Pharmacopeia adopted the system of parts by weight, but, unfortunately, they went on to say:

"Yet it may suffice to measure wine, water and aqueous liquids in some instances, provided that for this purpose vessels be employed, of glass where the nature of the substance requires it, whose capacities and divisions accurately correspond with the divisions or multiples of the modern pound." And so saying our fathers sowed the tares which grew up with the wheat, and choked out the true grain until only by the labor of many years were they uprooted and the system of parts by weight in its purity reinstated in the United States Pharmacopeia. The tares grew rapidly, for in the second edition of the Pharmacopeia, that of 1820, fluid measures were employed. The sin of the men of 1820 in changing from parts by weight to liquid measures of quantity was made greater by the fact that the liquid measures were not at that time in use among the apothecaries of America. That the amblyopia of the review was not deeper than that of their contemporaries is, however, shown by the following extract from a contemporary review of the National Pharmacopeia in July, 1821: "If the American Pharmacopeia be adopted throughout the United States, as no doubt it will be, these modes of indicating quantities must necessarily come into use, and that they will be continued after having been once intro-

[1] Abstract of President's Address at the Decennial Convention of the Revision of the United States Pharmacopeia, Washington, May 1, 1900.

duced, we do not hesitate to affirm, because they are more definite and precise and consequently safer than the old methods. In such case it will be necessary that the apothecaries be provided with the measures above mentioned."

The language of the Massachusetts Pharmacopeia of 1808 was English. The first United States Pharmacopeia of 1820 was printed in Latin, with a translation of the Latin into English upon the opposite page; and the Convention of 1830, as not departing from the use of Latin, justified itself in the language of the preface because "the Latin, if not essentially necessary, may prove highly serviceable by fixing the precise meaning of an English phrase which might not otherwise be well understood." Fancy an American apothecary or an American doctor of the present time, when he could not understand the exact meaning of the English, turning to the Latin in order to clarify his thoughts.

The Pharmacopeias of 1820 and 1830 were prepared by the conventions themselves, these conventions being composed solely of physicians. In 1840 the growth in numbers of the convention necessitated the reference of the detailed work of revision to a committee, and the method still in vogue was inaugurated. The same convention made itself further historic by determining that the convention to be called in 1850 should be composed of the two professions of medicine and pharmacy, by whose co-union in labor the continuance of the Pharmacopeia of the United States as an authority has been made possible.

Since 1840 the great part of the labor of revision of the Pharmacopeia has fallen upon the successive chairmen of the Committee of Revision. In sixty years of these labors there have been only four, namely, George B. Wood, from 1840 to 1860; Franklin Bache, from 1860 to 1870; Joseph Carson, from 1870 to 1880; Charles Rice, from 1880 to 1900. As no revision of the Pharmacopeia has been more successful than the last, and as at no time have the necessary duties of the chairman of the committee been as great as they are at present, so never in the century has there been found a man more laborious, more conscientious and painstaking, or better fitted by extraordinary acquirements and personal qualities to fulfil the onerous duties of the position than the present chairman; and your President most earnestly hopes that by his continuance in office the success of the next revision of the Pharmacopeia may be ensured.

During its whole life the United States Pharmacopeia has received no governmental support, and has been free from governmental control. Under the circumstances the influence which it has exerted upon the pharmaceutical and medical professions, the voluntary obedience which has been given to it are a tribute not only to its practical excellence, but also a strong evidence of that peculiar Anglo-Saxon power of recognizing authority which is not upon the statute books, a power born of self-control and common sense, which makes the race, of all others, most capable of self-government. The indirect recognition by the Government of the Pharmacopeia becomes each year more apparent both in Federal and State legislation, so that there does not seem to be at present any danger of the Pharmacopeia losing its control in the United States.

The Pharmacopeias which have been produced in the United States by voluntary effort both in the past and in the present contrast favorably with the governmental standards of European countries. In its scientific accuracy, in its general usefulness, and in the efficiency and elegance of its resulting preparations, our Pharmacopeia is the peer of the best.

I am not one of those who are conceited in things American, freely acknowledging that we have added very little to the great sciences which underlie the practice of medicine, and that we have been indebted to Europe for almost all of our fundamental inspirations; I still hold most strongly to the belief that there are no therapeutics superior to the American therapeutics, and that in no other country has pharmacy been carried to the perfection that it has reached in the United States.

Delegates of the pharmaceutical associations, I congratulate you on representing a profession which has attained its highest development in the United States.

There is a probably widespread, and certainly often spoken of, feeling that the medical profession of the United States does not properly appreciate and support the United States Pharmacopeia. There is some foundation for this feeling, but certainly it is exaggerated. It is true that — owing to the activity of manufacturing pharmacists, and the number and skill of their commercial salesmen (vendors of samples), aided by the deficiencies of medical education and the peculiar childlike credulity which is so common in doctors — all kinds of proprietary mixtures and proprietary articles, and extra-pharmacopeial remedies are largely used in the United States. It is so easy for the lazy doctor to write for Smith's Panacea for human ills, and so easy for the doctor who knows neither materia medica nor therapeutics to order Jones's Consumption Cure or Thomas's Kamianlia, that so long as laziness and incompetence remain with us so long will this thing be done. But this is no fault of the Pharmacopeia, and no perfection of the Pharmacopeia will greatly influence it. Certainly any attempt to reduce the products of the Pharmacopeia to the level of the proprietary or patent medicine would be to destroy the dignity of the work, to bring it into contempt, and finally to uproot its influence. Under the influence of State law and of public opinion the average education of the American medical profession is rapidly and steadily rising; in this and not in anything that this Convention or its committee can do lies the hope of the future. Moreover, the intensity of the feeling that the American medical profession is not so thoroughly interested in the Pharmacopeia as it ought to be rests largely upon a misconception of the intent of the Pharmacopeia and its relations to the medical profession. A pharmacopeia is not intended to be a guide to practice, or a working-book to be used by the doctor, but is really a hand-book of the apothecary. I do not believe that at any time or in any country pharmacopeias ever had much sale among the medical profession; and each year, as the professions differentiate themselves more and more, as the doctor becomes less and less of a pharmacist, the tendency of the doctors to buy pharmacopeias must grow less rather than more

The Pharmacopeia can only be popularized in the medical profession by making it a treatise on therapeutics; in other words, by causing it to cease to be a pharmacopeia. So long as it is a pharmacopeia it is the basis upon which text-books and dispensatories are

to be written; and it becomes through these treatises a guide to the medical profession. It remains the apothecary's *vade mecum*, with which in hand he does his work, and its sales must be chiefly among the apothecaries.

There may have been a time when the medical horizon was so narrow that the doctor had time to trouble himself as to how the druggist made laudanum, but at present the doctor has as much as he can do to store his mind with purely medical facts; he wants simply to know what laudanum does when he puts it into the patient, and he trusts the apothecary to give him laudanum when he calls for it.

Be these things as they may, it is certain that the present condition of the United States Pharmacopeia is one of great prosperity. The book itself ranks with the best of its predecessors or of foreign pharmacopeias, representing all that was possible in 1890. Its hold upon the people of the United States is more firm than it ever was before. Its sales have far exceeded those of any previous edition, and for the first time in the history of this Association the treasury is overflowing. Indeed, so rich have we become that the greatest danger which threatens the Association is, to my thinking, this surplus of revenue.

Standing on the great divide between the centuries, viewing the past and the present, what lesson can we draw that shall help us to make sure the future? Is it not steadfastness to the old ways? Is it not that we shall push straight out the old paths? For one hundred years they have been trodden by successive generations who have found them sure roads to scientific advancement and practical success. Why should we depart from customs whose soundness has been time-proven?

. . . . . .

Having adopted constitution and by-laws, appointed officers and the two committees, this Convention should give instruction to its officers and the two committees together to incorporate the Convention. I am told by eminent counsel that there is no legal difficulty in the way, only it must be clearly stated in the constitution that a delegate from one of the bodies entitled under the constitution to representation becomes by virtue of his election as a delegate a member of the incorporated body, and loses his membership when he ceases to be a delegate.

Finally, gentlemen of this Convention, a word and I have finished. As the American nation of 1800 seems to us to have been but a handful of seed from whose growth we are the fruit, so will those who shall meet here in the year 2000 think of the American people of to-day as a small body from which they have themselves sprung. We live but for the moment; one hundred years from now the greatest of us will remain only as fading memories; as men whose records have been so over-written on the palimpsest of time that only here and there can a sentence be deciphered. So it ever has been and so it ever shall be with the human race; men come and go and are not; but though the worker disappears and is forgotten the work lives on. Our fathers labored and we have entered into their labors. Let us see to it that preserving in its essential lines that which has come to us, and adding to it in our day and generation as strength is given us, we may leave for the coming century good work and true, which shall remain as the eternal though unrecognized witness of our earnest living.

THE IDEAL RATION FOR AN ARMY IN THE TROPICS.*

BY EDWARD L. MUNSON, M.A., M.D.,
Captain and Assistant Surgeon, United States Army, Washington Barracks, D. C.

(Continued from No. 18, p. 466.)

II. STANDARDS OF DIET.

Various attempts have been made by physiologists and chemists to devise standards representing the amounts of nutrients required, under varying conditions, for daily sustenance. There are, however, two great difficulties in the way of setting up such standards. The first is that there is not sufficient definite knowledge on the subject of nutrition to permit of an exact statement as to how much the average man, doing a certain class of work, requires for the maintenance of his body in vigorous condition and for the creation of energy expended in the form of heat and work. The second difficulty is due to the fact that different individuals of the same class differ widely in their demands for food and the use they make of it. One will eat more and the other less, while both do the same amount of work; or both will eat the same food and do the same amount of work, yet one will be fat and the other lean; or both have the same diet, and yet one will be strong and capable of performing considerable work, while the other will be weak and able to accomplish little. Exactly why individuals differ in their ways of utilizing their food, and how to measure these differences and make rules to exactly fit them, are problems which are as yet far from solution. The nutrition of man is by no means a mere question of grammes of protein and units of energy, and hence the subject of dietetics can never be reduced to an exact science. The best that can be done is to make general estimates, with the understanding that such estimates are only approximately correct, even for a special class. These are reached by observing the amount and relative proportion in the food actually consumed by the individuals composing the class in question, and also by experiments in which the income and outgo of the body are directly compared. But little investigation has as yet been done by the latter method, and present knowledge of nutrition may be considered to be based entirely upon observation and analysis of established dietaries. For laboring men performing moderate muscular work, the standards for daily diet, according to Atwater,[18] have been variously fixed as follows:

Nutrients in Daily Food.

Author.	Protein, grammes.	Fats, grammes.	Carbohydrates, grammes.	Fuel value, Calories	Nutrient ratio.
Playfair, England	117.78	49.83	530.01	3,140	1:5.4
Moleschott, Italy	131.37	40.77	548.13	3,160	1:4.9
Wolff, Germany	126.84	36.24	538.07	3,020	1:4.7
Volt, Germany,	117.78	54.36	498.30	3,055	1:5.2
Atwater, United States,	126.84	77.01–149.49	398.64–548.13	3,500	1:7

* This essay was unanimously awarded the prize of $100, offered by Dr. Louis L. Seaman, late Major and Surgeon First United States Volunteer Engineers, through the Military Service Institution, Governor's Island, N. Y., for the best discussion of the above subject. The judges were Col. John F. Weston, Acting Commissary-General, U. S. Army, Lieut.-Col. Charles Smart, Deputy Surgeon-General, U. S. Army, and Lieut.-Col. William E. Dougherty, Seventh U. S. Infantry. The competition was open to all commissioned officers of the army, navy and volunteer forces.

In determining the diet of the soldier, however, the above standards do not apply, since they are sufficient only for moderate labor and are not capable of furnishing the requisite energy for the muscular work of high degree which troops, from the nature of their service, may at any time be called upon to perform. For the requisite data in this respect, it is necessary to refer to the dietaries of men at hard labor, the following table being intentionally made to include dietaries of this character for various countries in the northern portion of the temperate zone, since the United States Army is heterogeneous in its composition, and the foreign-born element — largely derived from the countries named — undoubtedly brings with it into the service the dietetic preferences resulting from previous habit:

TYPICAL HARD LABOR DIETARIES FOR THE NORTHERN PORTION OF THE TEMPERATE ZONE.

	Protein, grammes.	Fats, grammes.	Carbohydrates, grammes.	Fuel value, Calories.	Nitrogen, grammes.	Nutritive ratio (protein to energy.)
England . . . . Royal Engineers, active work. Playfair.[16]	144	83	631	3,950	23.04	1:5.7
Sweden . . . . Mechanics. Hultgren and Landergren.[17]	189	110	714	4,725	30.24	1:5.1
Russia . . . . Factory operatives, near Moscow. Erismann.[18]	132	80	584	3,680	21.11	1:5.8
Germany . . . . Machinists, Krupp Gun Works. Prausnitz.[19]	139	113	677	4,395	22.24	1:6.7
Southern Austria . . Farm laborers, at harvesting. Ohlmüller.[20]	159	62	977	5,235	25.44	1:7
United States . . . Mechanics, Massachusetts and Connecticut. Atwater.[21]	154	227	626	5,275	24.64	1:7.5
United States Navy Ration . . . . Atwater.[22]	143	184	520	5,000	22.88	1:6.8
United States Army Ration, maximum author's calculation .	164.2	97.8	600	4,061	25.33	1:5
Average	132	119.5	668	4,540	24.36	1:6.2

Total carbon, 463.89 grammes; nitrogen to carbon, 1:19.4.

As compared with the United States Army ration, included in the above table, the average of these dietaries is seen to be slightly in excess in fats, carbohydrates and fuel value, but deficient in protein. On the whole, however, the difference is not great, and the sufficiency in amount and proper proportion of the food provided for the soldier serving in a more northern portion of this country is abundantly demonstrated.

In the warmer portions of the temperate zone, but still well outside the tropics, the quantities of the several proximate principles required by the inhabitants are markedly inferior to the figures above given. The dietaries of these regions have not been as thoroughly studied as in countries lying in a cooler climate, but the following data are sufficiently comprehensive to be of both interest and practical importance. These figures, however, are based upon races, with the exception of the United States negro, of less body weight than those of colder climates, and hence are not properly comparable with similar figures for the latter class until reduced to a common standard

TYPICAL WORKING DIETS OF THE SOUTHERN PORTION OF THE TEMPERATE ZONE.

	Protein, grammes.	Fats, grammes.	Carbohydrates, grammes.	Fuel value, Calories.	Nitrogen, grammes.	Nutritive ratio (protein to energy).
Italy . . . . Mechanics. Manfredi.[23]	76	38	396	2,290	10.55	1:5.3
Italy . . . . Army ration, peace. Moleschott.[24]	114	14	592	3,066	18.24	1:5 5
Japan . . . . Prisoners at work, Tokio. Eijkmann.[25]	66	9	544	2,585	10.66	1:3.5
United States Mexican, New Mexico, families. Goss.[26]	68	73	572	3,320	10.88	1:3.3
United States Negro . Southern Gulf States, families. Atwater and Woods.[27]	62	132	436	3,270	9.90	1:11.8
Average . . .	77	53.4	508	3,012	10.72	1:3

in this respect, since, according to Church,[28] the capacity for muscular work may be considered as closely related to body weight. If it be assumed that laborers in the southern portion of the temperate zone have an average weight of 125 pounds, while the corresponding class in the cooler part of the same zone have an average weight of 145 pounds — about that of the mean for the United States Army — the above average figures should be corrected as follows:

Protein, grammes.	Fats, grammes.	Carbohydrates, grammes.	Fuel value, Calories	Nitrogen, grammes.	Nutritive ratio (protein to energy).
89.3	61.94	589.28	3493	14.3	1:3

Total carbon, 354.73 grammes; nitrogen to carbon, 1:24.8.

While the foods habitually used by natives of the tropics are well known to differ widely in character from those employed in temperate climates, and while the existence of a certain deficiency in the native dietary in the matter of protein and fats has long been recognized, there has been but little investigation as to the force value of the tropical dietary or to the exact qualities and relative proportions of the several proximate principles entering into its composition. Recourse to several large medical and technical libraries, together with application to the Department of Agriculture for information on this subject have, however, shown that the question of tropical dietaries has been locally studied by Maurel,[2] in the Island of Gaudeloupe, by Church,[28] in British India, by Eijkman,[29] in Java, and by Lapicque,[30] in Abyssinia. The results obtained by these investigators in diverse portions of the tropical zone, although but few in number, nevertheless agree so closely in all respects that they may be accepted as conclusive and their average as fairly representing the nutrient standard of the laboring class of natives throughout the tropics. Using figures given by Maurel,[2] the average diet for the West Indian native, at hard labor, appears to be made up about as shown in the first table on the following page.

Eijkman[29] gives the ordinary food eaten by the Malay as consisting, per day, of 800 to 1,200 grammes of boiled rice, 150 to 200 grammes of ducks' eggs, 60 grammes of meat or fish, 150 to 250 grammes of pastry rather free from fat, and a varying amount of fresh

Articles.	Amount in grammes.	Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories.
Fresh beef	20	3.16	—	2.94	.470	38
Chicken and fish (mullet), average	40	12.80	—	8.40	1.344	30
Rice	340 2	13.60	368.75	26.53	4.245	1,982
Yams	566	1.13	141.73	5.66	.905	616
Bananas, ripe	566	3 39	118.84	7.35	1.176	575
Sugar cane	340.2	—	82.25	5.06	.500	234
Total	1,872.4	34.08	581.64	55 94	8.940	2,575

Total carbon, 302.85 grammes; nitrogen to carbon, 1:37.8.

fruits. The average diet of a number of Malay laborers was determined by him to have the following composition:

Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories	Nutritive ratio (protein to energy).
30.2	471.9	73.3	11.73	2,812	1:7.4

Lapicque [20] states that the native Abyssinian soldiers in the Italian service at Massowah subsist almost entirely on the native durrha (kaffir corn) made into cakes without fat; various sharp sauces, and sometimes ground beans or lentils, being used as accessories. Meat is eaten not more than once weekly, and is regarded rather as a condiment than a staple article of food. As a result of a large number of analyses the dietary of the Abyssinian soldier was found by Lapicque [20] to be made up as follows:

Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories	Nutrient ratio (protein to energy).
30	360	50	8	2,100	1:8.7

In British India, according to Church,[23] the coolie rarely tastes animal food of any character, but subsists almost entirely upon rice and soy beans, the latter containing a large proportion of vegetable oil as well as nitrogen. This ordinary diet of the coolie laborer, in proximate composition and food value, is thus determined by Church:

Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories	Nutritive ratio (protein to energy).
33.1	355.8	61.6	9.89	2,013	1:7.7

The average of the above four tropical dietaries is as follows:

Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories	Nutritive ratio (protein to energy).
31.8	442.2	60.21	9.63	2,300	1:8.8

For purposes of comparison, however, these figures, like those for the inhabitants of the warmer portions of the temperate zone, must be reduced to the common standard of body weight of 145 pounds, the average weight of laborers in the undersized races of the tropics being regarded as about 115 pounds, and the above figures are thus proportionately increased, as shown in the following table:

Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories	Nutritive ratio (protein to energy).
40	560.01	76.18	12.18	2,900	1:8.8

Total carbon, 318.13 grammes; nitrogen to carbon, 1:26.1

On contrasting the several dietaries which have been shown to obtain with men having an average weight of 145 pounds, engaged at hard muscular labor, in the northern portion of the temperate zone, the southern portion of the temperate zone and in the tropics, the difference in the quantity and character of food taken is seen to be most marked, particularly in relation to the protein and fats. The difference in force value between these dietaries is also very great, and even the carbohydrates, contrary to usual ideas, are diminished in the tropics in no small degree. These typical dietaries are shown in the following table:

Climate.	Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Carbon, grammes.	Fuel value, Calories.	Relation of nitrogen to carbon.	Nutrient ratio (protein to energy).
Northern portion of temperate zone	119.5	666	152	24.36	463.89	4,540	1:19.4	1:6.2
Southern portion of temperate zone	61.9	589 2	89.3	14.3	354.73	3,493	1:24.8	1:8
Tropics	40	560	76.18	12.18	316.13	2,900	1:26.1	1:8.8

It may, however, be urged that the marked variation in the composition and force value apparent in the above dietaries is due rather to racial preference than to climatic influence. This claim would scarcely appear to be well founded. It is a matter of common observation that natives of the tropics removed to colder climates soon adopt the dietetic customs of the region in which they may be resident. Further, it should be noted that Atwater and Woods [27] showed the average daily consumption of food in 20 negro families in the rural districts of southern Alabama to consist of 62 grammes of protein, 132 grammes of fats and 436 grammes of carbohydrates, and to possess a force value of 3,012 Calories; while Frissell and Bevier [21] found that the average dietary of 19 negro families of the same class, resident in Northern Virginia, yielded 109 grammes of protein, 159 grammes of fats and 444 grammes of carbohydrates—with a force value of 3,745 Calories. It is idle to assume that this great difference in the composition and nutrient value of the dietaries for corresponding classes of the same race, resident in different latitudes, can be dependent upon other than climatic conditions. It is evident, therefore, that the food of human beings, both in relative proportion and nutrient quality, varies directly with temperature, as approximately expressed by latitude.

The standard dietaries having been established for laboring men performing hard work under diverse climatic conditions, it becomes necessary to examine the present United States Army ration with a view of as-

certaining the nutritive value of its several components, and determining whether the quantities in which their issue is authorized will permit their combination in a daily allowance, not only desirable in theory and well qualified to maintain the health and vigor of the soldier but also thoroughly practicable under all conditions of military service.

(To be continued.)

Editorial Department.

BANQUET IN HONOR OF DR. JACOBI.

THE seventieth anniversary of the birth of Dr. Abraham Jacobi, of New York, was celebrated at Delmonico's on Saturday evening, May 5th, at a banquet which was attended by four hundred of his friends and professional associates. It was a distinguished and representative gathering, and a large number of ladies, among whom was Dr. Mary Putnam Jacobi, the wife of the guest of honor, listened to the speeches from the gallery. The menu cards contained an etched vignette of Dr. Jacobi, and during the evening there was presented to him a "Festschrift," entitled "International Contributions to Medical Literature," which contained a large number of original papers by eminent physicians and scientists in all parts of Europe and America. More than a year was taken up in the preparation of the volume, which is believed to be the first of its kind published in this country, and the edition of a thousand copies will be distributed principally among the libraries and physicians of the United States. Dr. Jacobi's birthday is really the 6th of May, and so at midnight the entire company rose, and amid much enthusiasm drank a toast of long life and happiness to him.

DR. JOSEPH D. BRYANT, one of Dr. Jacobi's successors in the office of President of the New York Academy of Medicine, presided, and made the opening address after dinner.

"Fortunate, indeed, it is, in the affairs of this life," he said, "that worthy and well-directed efforts addressed to the securing of personal and public betterment frequently beget, though ofttimes somewhat tardily, the sentiments of abiding confidence and esteem for those who prudently proclaim their importance and diligently labor for their attainment. It should be recognized at the outset that the observances of the evening are not devoted more to the learned gentleman whom we so delight to honor than to the recognition of those ennobling virtues of which he is the embodiment. The notable examples of the beneficent labors of our esteemed friend in the exercise of his professional skill and fraternal devotion are singularly akin to each other in their inception and in their spirit. In the one example he dedicated, through various channels of bounty, the full measure of his professional sagacity and fervor to the alleviation and cure of the suffering incident to the freedom of individual birth. In the other we are taught by the history of his fatherland that he bestowed a like measure of patriotic zeal to liberty's cause, fostering the birth of individual freedom. To the former service the ripe abundance of his years has been given, to the latter the richness of his youth was well-nigh sacrificed; with both his name is indelibly recorded, as the wise physician and the uncompromising patriot.

"Medical thought and medical progress, here and abroad, bear abundant evidence of the potent influence on their status of the products of his studious, logical mind. Thousands of physicians, while students in medicine and at bedside consultation, have gained of inspiration and comfort from his teachings and advice, in a degree equalled only by that of the fortunate recipients of his professional ministrations. All along the avenues of commendable professional endeavor directed to the attainment of proper public recognition, of increased knowledge and *esprit*, are noted exalted products, to the achievement of which he contributed an untiring energy, guided at all times by sincere executive thought. The justice of this statement is witnessed by the significant presence of the New York Academy of Medicine and its library, and further emphasized by the fact that in the late effort to increase the latter he supplemented a previous bountiful contribution by the major part of the recent gain. The patriotic zeal of his earlier life was an earnest of his devotion to public duty during the later, and in neither instance has the cry of distress gone unheeded, while in both the weak have been strengthened, the wavering encouraged, and the justice of a cause assured by his word and presence. What he was to those of noble aspirations of the land of his birth he has been and is to those of the land of his adoption."[1]

DR. FREDERIC E. SONDERN read a number of congratulatory letters and telegrams from universities, professors and distinguished medical men in all parts of the world, after which the following original poem, sent by Dr. S. Weir Mitchell, was read by Dr. Robert Underwood Johnson:

ABRAHAM JACOBI.

Medicus, Magister, Amicus.

No honors hath the State for you whose life
From youth to age has known one single end.
Take from our lips two well-won titles now,
"Magister et Amicus"— Master, Friend.

From the gray summit of attainment you
Look on the rugged path you knew to climb.
Take, with our thanks, for high example set
The palm of honor in this festal time.

Constant and brave, in no ignoble cause,
The hopes of freedom armed thy sturdy youth;
As true and brave in the maturer years
Thy ardent struggle in the cause of truth.

Nor prison bars, nor yet the lonely cell,
Could break thy vigor of unconquered will;
And the gray hairs which build as cruel walls
Have found and left thee ever victor still.

Ave Magister! take from us to-night
The well-earned praise of all who love our art
For this long lesson of unending work,
For strength of brain and precious wealth of heart.

Your busy hand gives much; but, oh, far more,
The gallant soul that teaches how to meet
Unfriended exile, sorrow, want, and all
That crush the weak with failure and defeat.

We gave you here a home; you well have paid
With many gifts proud freedom's generous hand,
That bade you largely breathe a freer air
And made you welcome to a freer land.

Ave Amicus! if around this board
Are they who watched you through laborious years,
Beyond these walls, in many a grateful home,
Your step dismissed a thousand pallid fears.

That kindly face, that gravely tender look,
Through darkened hours how many a mother knew!
And in that look won sweet reprieve of hope,
Sure that all earth could give was there with you.

Ave Magister! Many be the years
That lie before thee, thronged with busy hours!
Ave Amicus! take our earnest prayer
That all their ways fair Fortune strew with flowers.

DR. WILLIAM H. THOMSON, the present President of the Academy of Medicine, responded to the toast, "Dr. Jacobi, the Physician." He said that he had heard of Dr. Jacobi's reputation in that special department of medicine in which he has won such distinction long before he came to New York, thirty-eight years ago. His first impression of him on hearing him address an audience was that he was a stray archangel. During his entire medical career he had often been associated with him, and one of the characteristics of the man which had most impressed him was his careful observation of cases. This invariable habit of minutely investigating every case brought before him had been of incalculable value to thousands of students who

[1] Dr. Jacobi was born in Hurturn, Westphalia, on May 6, 1830, and was educated at Göttingen and Bonn. He enlisted in the "Young German" army of 1848, and was imprisoned for treason. He received the degree of M. D. in 1851, and came to New York in 1853.

had enjoyed the privilege of attending his clinical lectures; and it was no wonder, therefore, that his unequalled skill as a diagnostician had made him prized as few others in the profession as a consultant. In conclusion, he spoke of Dr. Jacobi's characteristic of always keeping in the forefront of the advances in medical science. With the engrossing cares of an unusually busy professional life, it was no easy task to keep fully abreast of the times, but this he always did. He was an eager devourer of medical literature, and was ever the first to welcome any addition to our knowledge, whether in the field of pathology and etiology or of therapeutics, and whether it came from across the Atlantic or from the profession in America. In this way he had kept step with the wonderful developments in bacteriology which had been made in the last few years, though at the same time he was always judiciously conservative, and his vigorous mind would not permit him to accept mere theories without proof.

PROF. WILLIAM OSLER, of Johns Hopkins University, responded to the toast, "Dr. Jacobi, the Scientist." "The great point of Dr. Jacobi's writings," he said, "was that there were so few of them, a marvellous thing in a generation which writes unendingly on all conceivable subjects." After mentioning a few of his scientific communications, each of which was his "most important," he went on to say that his really most important work was his treatment of the subject of infant feeding. "He is the banisher of colic and the soother of the infantile midnight," Dr. Osler remarked. "Had the babes and sucklings of the land any other language than a cry they would rise up and call him blessed. It was not my good fortune to be present at the last convention of the Women's Christian Temperance Union, but I am in receipt of some information from a friend of mine who was there, which information goes to show how the influence of Dr. Jacobi on behalf of the natural feeding of infants has spread the light. Here perhaps I should apologize to any young ladies who may be present in the gallery, but if the W. C. T. U. can stand it, I think they ought to be able to. The fact is, that estimable organization, I am given to understand, is going to form a Women's Infant Suckling Union. Legislation is going to be proposed at the next Congress making it a criminal offence for a baby to receive anything but its natural food; and providing that if this cannot be obtained at home, it shall be applied for and received at the offices of the Women's Infant Suckling Union. Profound investigation, I understand, has discovered that the debased and criminal and cranky of our land have been bottle-fed babies. All Silver Democrats, Populists and Christian Scientists, so the investigation shows, have been raised upon the bottle. For this saving motion on the part of the W. C. T. U. the nation is indebted, without doubt, to the teachings of our friend, Dr. Jacobi." Speaking more seriously, Dr. Osler said that Dr. Jacobi had maintained a fresh and vigorous intellect to an old age, and was not one of those who had fallen behind the advance of science, but was the contemporary of the best thought of the present.

PRESIDENT SETH LOW, of Columbia University, responded to the toast, "Dr. Jacobi in Relation to Medical Education." He eulogized Professor Jacobi's work as a teacher in the College of Physicians and Surgeons, the Medical Department of the University, and said he was very sure that the trustees would not allow the year to pass without some special recognition of his thirty-five years of brilliant and faithful service. He then referred to Dr. Jacobi's declination, in 1894, of the high honor of a chair at the University of Berlin, which had been offered him with many flattering inducements; saying that here he had received his opportunities, and to this country he preferred to give his invaluable labors.

THE HONORABLE CARL SCHURZ responded to the toast, "Dr. Jacobi as a Citizen." He said: "Of Dr. Jacobi's friends here, I am, no doubt, the oldest; probably the oldest in years, and certainly the oldest in friendship, for that friendship can look back upon just half a century of uninterrupted and, I may add, unclouded duration. It was in the year 1850, in the German University town of Bonn, on the Rhine, that we first met. He was then still a student of medicine in regular standing. I was already an exile, but had recently come back to Germany, engaged in a somewhat adventurous enterprise connected with the revolutionary movements of that period — an enterprise which made it necessary to conceal my whereabouts from those in power, with whom my relations were at the time, to speak within bounds, somewhat strained. I had the best reasons for desiring to avoid persons whose ill will or indiscretion might have brought me in contact with the constituted authorities. It was then that a mutual friend introduced Jacobi and me to each other."

After dwelling for some time longer on their early reminiscences, Mr. Schurz spoke of his knowledge of Dr. Jacobi as a fellow citizen in the new world. "In him," he went on to say, "we see one of the adopted citizens whose peculiar patriotism is not always understood and appreciated by our native friends. It may strike some of you as somewhat audacious when I say that the adopted citizen may in a certain sense be a more jealously patriotic American than the native; and yet it is true. The adopted citizen usually preserves certain sentiments and reverential attachments to the country of his birth. But, just because of this, many are especially anxious to see the country of their adoption, by its virtue and the high character of its achievements justify their separation from their native land, and enable them to point with just pride to the choice they have made. They may for this very reason, when they see the character of their adopted country put in jeopardy, or its good name in the family of nations endangered, resent this, and stand up for the cause of right, and of integrity, and of honor, in their adopted country, with an intensity of feeling even greater than that which ordinarily animates the native."

Next followed the presentation of the "Festschrift," which was made by Dr. ARPAD G. GERSTER, in the following words:

"MR. CHAIRMAN AND GENTLEMEN: — It was nearly two thousand years ago that the poet of the Augustan era, Horace, penned the beautiful but true words, *Exegi monumentum ære perennius*. Every one knows how the prediction has been literally fulfilled. However, the poet's conviction would not have been thus confidently expressed had there not been underlying it the solid fact that of all men's works there is none more enduring than the written word. It is not strange, therefore, that when a group of five men met a year ago last February to consider a way in which the seventieth birthday of Dr. Jacobi ought to be celebrated, the idea of publishing a "Festschrift" — that is, a collection of literary contributions furnished by a number of willing friends and colleagues — was immediately adopted.

"Mr. Chairman, I hold in my hand a volume containing the scientific contributions of fifty-three medical men of note, men representing two continents and eleven nations. This tribute of the veneration and esteem of the authors is adorned by a splendid etching, the product of the masterly needle of James D. Smillie, a faithful image of the Ambrosian features of the original. I trust that the contents of the volume may be found as worthy of him whom they are meant to honor as their outward garb. Mr. Chairman, permit me through you to ask Dr. Jacobi to accept this volume as kindly as it is offered. Let it serve as the outward token of our affectionate regard. Permit me also to extend to him the sincere wish for his long-continued health and happiness. May it be granted to him to enjoy the sunny afternoon of a useful life in the mellow atmosphere of philosophical contentment, surrounded by those whom he loves best. *Vivat, crescat, floreat!*"

Dr. Jacobi, who was deeply affected, was greeted with loud and repeated cheers when he arose to respond. He spoke as follows:

ADDRESS BY A. JACOBI, M.D., LL.D.

I wish I could proceed from man to man and in silence press your hands, for words of mine do not suffice for

the throng of feelings that swell my heart. Before me I see men in all high walks of life, members of my own and of other professions, I see statesmen, poets, university professors and presidents — to me this illustrious assembly is a university indeed. Of medical men there are at least two generations, few though of mine, but many of my own pupils who long ago became my masters and my teachers.

Occasions like this, which is unique in its brilliancy and scope, are apt to try a man's soul. Your appreciation and applause is elevating and encouraging, but there is an element in it of a sorrowful sense of humiliation and discouragement, inasmuch as no man I believe can be, and I certainly am not, conscious of deserving them to the degree they are tendered. I take it for granted that I am expected to speak, in part, I suppose, of the topic of the evening — myself. But how, and what? I have been eulogized as if I were dead. Not being quite dead yet, I should not join in the praise. On the other hand, to speak derogatorily of my doings would be discourteous to those who expressed their good opinions. If, after all, you will be content with hearing a plain talk on some of the things that happened to me and to the profession this half century, I shall consider it an honor to be listened to.

When I speak to you of my aspirations on my arrival here nearly forty-seven years ago, I probably say nothing new to those who once found themselves in a strange world, ignorant and not known, without relatives or social influence. I wanted, both from necessity and from impulse, work in my profession. Young years had ripened in me the ambition to be useful either to the individual or to the masses. That is what had led me into the political life of the German revolution. I wanted to be useful to the sick, and in order to reach that aim strove to reduce my ignorance, which aside from being a natural gift was vastly increased in the wasting idleness of years spent in a Prussian state prison. Aspirations, however, will grow with widening horizons. When I came here I knew nothing of American medicine. It was simply unknown in Europe. Nor was America much better informed in regard to European medicine. With the exception of a few translations from the French and a number of English republications,— called American editions,— European literature was but scantily known and appreciated except by the few who, like Jackson and Oliver Wendell Holmes, had enjoyed the opportunities of being with that great master, Louis. I felt I might help in building a bridge between the literatures of the two hemispheres, and Stephen Smith took my first extracts. That office was rendered more unnecessary from year to year. European languages and literatures are more studied amongst us now, and personal intercourse between the two continents is easier and most frequent; so frequent indeed that there are voices that seem to advise against our young men's going to Europe to embark on post-graduate studies. That advice is to be deplored. I should improve it by advising Europeans to come here for that purpose. The more the languages that are studied, the wider the horizons that are scanned, the more different methods that are learned in medical pursuits, the more a man, young or old, will become a world to himself. By such exchange Europe has learned, will learn, to respect us as we have admired Europe.

At an early time, long before the foundation in 1857 of the German dispensary, the first medical institution in New York in which German-born physicians began their cooperation with American medicine, I took an interest in the physiology and pathology of infancy and childhood. Was it the helplessness of the patients, the apparent or alleged difficulty of the subject, or its neglect in the American literature, or all three of these reasons, that made me take hold of it, I cannot tell. But it fired my heart and imagination to suppose that if I labored for that honor, the history of American pediatrics would possibly contain *my* name amongst, as I fondly hoped, many more. Beyond that my dreams never went. I could not believe, nor do I to-night, in spite of what has been going on here, that, as Heine has it, my name should ever be mentioned among the best. But what I know from the history of the subject is this, that after the foundation of the first special clinic for the diseases of children in the New York Medical College in 1860 and in the University Medical College in 1865, such clinics increased in number, so that there is at present no large medical school without one. A very prominent part of our good medical literature is pediatric, and there are two journals exclusively dedicated to the diseases of children, some full professorships have been established, and the teaching mainly in New York, also in Boston and Philadelphia, has in part become bedside instruction.

Much credit has been given me I know for the rapid development of pediatrics in our country. It is true I have the doubtful advantage of being born in advance of my collaborators; but the time was matured for the new birth, and it so happened that many of the best medical minds of the nation became interested as I had been. Beside Stewart, Eberle, Meigs, hard-working, painstaking and honest J. Lewis Smith should not be forgotten. History, indeed, is not easily made by individuals, for a Washington is not born to every century or country. Not even a Bismarck could have moulded Germany into one nation if it had not been for the preparatory labors of previous generations, that of the revolutionary youth of 1848 included. Nor could a Johns Hopkins create what we now know Johns Hopkins University to mean, without the constant and conscientious co-operation of great men whose names are on every lip. It is true, however, in science alone, as pathfinders and organizers, single men *may* make history, but the tribe of Paracelsus, Morgagni, Haller, John Hunter, Bichat and Virchow is not numerous.

So you see that I have been most fortunate. A large family of brilliant pediatrists has grown up around me both in private practice and in official positions. Through them to a great part clinical teaching has become the ackowledged means of medical instruction, though in most of the faculty frames their branches are still considered inferior to what is called a full professorship with didactic teaching. On the other hand, pediatrics is by force of circumstances given the very highest rank; for instance, in Columbia University. It recognizes the necessity of postponing special pediatric teaching to the fourth year; that is, after the young men are deemed to be fully prepared and capable; it also considered itself lucky when the generosity of an unknown donor enabled it to establish a pediatric ward in Roosevelt Hospital for bedside instruction.

Unknown donor! More unknown or known donors are wanted. A single half million of dollars will suffice to build and endow a child's hospital of fifty beds. When that will be accomplished, in connection with a medical school, then, and then only, will Columbia, or any other university be able to supply the Commonwealth with doctors who had ample opportunities to study the diseases of infants and children that will always form the majority of their patients. The race of Vanderbilts, Carnegies, Sloanes, Ottendorfers, Woerishoffers, Seth Lows, Paynes and Pierpont Morgans cannot possibly be extinct.

In 1853 — I speak of what I have seen myself — the medical schools had the most accomplished teachers and to a large part the most immature students. The teachers were mostly men of national reputation; many of them were instructed in Europe, most of them had enjoyed a classical education. Matriculants, however, were admitted as well from the plough as from the college, and no questions asked. The curriculum extended over two years, was almost exclusively didactic, the professor would teach the same subjects annually, and clinical teaching was in its embryonal stage. There are those here who remember that time, and also the lengthening of the course to three and finally to four years. Clinical teaching I have seen extending until, together with obligatory laboratory work, it bids fair to assume the leading part in our instruction.

In that way we imitated but did not reach Europe. It takes some time to get so far. We were a young people, and where the plough was required to sustain our lives, the microscope with its scrutiny of the almost invisible had

to wait. Our scientific institutions were not endowed and had to serve immediate practical ends. Laboratory workers could but rarely be paid for lack of funds. *But now* and for some time past, well-to-do men go into medicine for love, and not for money. They invest their own in their pathologic, biologic, histologic, or chemic labors, and as good citizens of the Republic are satisfied with the interest their investment will bear to the domain of science, in the service of humanity. Medicine, like politics, will be purer for the money put into it, instead of being taken out of it.

In still another respect I have been most fortunate. While pediatrics has become the subject of special study, and while there are even those who restrict their practice to infants and children, there never was the tendency to set it up as one of the narrow specialties. In regard to them many changes have taken place. During my own early life I have seen a meritorious man whom I much admired, Horace Greene, persecuted and derided because he paid what was considered too much attention to the larynx, perhaps also — who can tell — because he knew more about it than all of the rest; and while getting older I had to observe, first in Europe, then with us, the tendency to exaggerated specialization, which has contributed much to narrow the scientific, mental and moral horizon of many a young man who means to become a wealthy and famous specialist without ever having been a physician. I know of no pediatrist with that turn of mind. To study and practise a specialty should not mean to cut loose from medicine. It is not in vain that the fourteen great national special organizations feel the good that is in the consolidation into a triennial congress.

In regard to our medical schools it should be remembered that, with few exceptions, all of them were at one time, and most of them are still, private institutions. An intelligent American audience need not be told that vanity, avarice, territorial pride, professional jealousy, had a good deal to do with the mushroom growths. St. Louis and Chicago had at one time, and have perhaps to-day, thirty medical schools between them. That is why professors are as numerous as crab-apples, and plain doctors are scarce, at least in large cities. I am certain I express the opinion of all here when I say that medical teaching will be better, and more uniform, and more in accordance with the requirements of the public, when our one hundred and fifty schools will have been reduced to twenty-five, and each of them will be connected with a university, as its medical department.

At the same time, in 1853, American medical literature was in its beginning. It is true Drake had long before written his "Principal Diseases of the Valley of North America" — an immortal work. Holmes had proclaimed the contagiousness of puerperal fever many years before Semmelweis; but such great achievements were few. Original books were scarce. Some of our few journals were of the best. I mention the honest, scientific and conscientious *Journal of the Medical Sciences*, and the always noble and refined *Boston Medical and Surgical Journal*. There were in New York the *Journal of Medicine*, which has since been transformed into the *New York Medical Journal*, and the prototype, alongside the *Boston Journal*, of our present weeklies, the *American Medical Times*. And now in 1900! Your literature is as well known to you as to me. Let me speak, therefore, only of our more than three hundred medical journals. That some represent the finest flowers of intellectual research and keen observations, many more, however, the choicest rubbish accumulated by phenomenal ignorance and advertising impertinence, is simply a sad fact. Reduce them to forty; these forty will have a larger market, may be able to select their contributions and to pay the contributors, while at present they enrich the publishers only. The larger markets will enable professional men or corporations to follow and improve upon the example of the *Philadelphia Medical Journal*, and at least strike out for independent action, and finally found an independent press, not relying for its sustenance on the advertisements of proprietary articles, whose principal element is the barbarism of their names, or on so-called original papers which bear the unwritten signature of nostrum manufacturers on every one of its bold and shameless pages. Gentlemen, it is time things should take a turn. There was a period when they asked: Who reads an American book? American books are now read the world over by privileged men, and even translated. Verily, verily, the time should come speedily when they will ask: Where is the ignoramus that does not know American literature?

Twenty years' exertion before the legislature on the part of the medical profession — not of the schools, some of which were opposed to the progressive movement — has at last resulted in the demands of a minimum of preliminary knowledge before matriculation, and, further, in a law according to which the license to practise depends on the results of a State examination for citizens and foreigners, that is not controlled by the medical schools. The law, in its fear of improper influences, has even, incorrectly, I think, excluded from the board of examiners whomsoever is in any way connected with a teaching faculty. In all these successful endeavors of the rank and file of the profession, I lent my hand. If there be any merit in my so doing, I claim it. For though a college professor, I saw the mistake of the schools that combated the inevitable progress on account of alleged but misunderstood interests, and kept intact and sacred my allegiance to the great profession in which I started, and in which I hope I shall remain to my last hour. With another step in the evolution of medical teaching I have much less to do than I could wish; for the growth of post-graduate schools has not only disseminated modern knowledge and methods amongst the established practitioners, but also started an impulse in the graduate schools to arrange for post-graduate courses.

Medical societies have grown in membership, numbers and influence. But latterly their number has grown so as to justify the suggestion that there is no blessing in the multiplicity of names, inasmuch as new societies have to recruit themselves either from the members of older ones, or to look for candidates amongst the young men, by more or less scrupulous canvassing. There is more strength in forceful consolidation than in fanciful expansion. Besides, it is a matter of sincere regret to many of us to note that the spirit of unfriendliness should not be buried forever, and that now and then personal vanities and grivances have the better of common sense and justice, and of the professional welfare. Many years ago one of the societies — the orthopedic — gave up its separate existence to become a section of the Academy of Medicine; there are some others that would be more useful than they are even now by taking a similar step. Within the time I speak of that Academy took wondrous strides. I knew it in a small room in the University of Washington Square, in West 31st Street, and love it in its present palace, with its ever increasing public medical library, second in importance in the country, its impartial, non-political interest and co-operation in all public sanitary questions, with its labors in matters of quarantine, cholera and watershed, with its generosity to members and non-members alike that is so recognized as to provoke callous abuse, and with its ten sections in constant working order. They have given the young men, during now more than a dozen years, the opportunity for legitimate competition, for obtaining a hearing and making their reputations. Ask them, and they will tell you that their growing renown — next to themselves and their honest work — is due to the possibilities afforded them in the New York Academy of Medicine. May its shadow grow forever!

During a long life I have seen more. Hospitals were built or enlarged, dispensaries and similar places established to such an extent as to justify anxiety about, and the battle against, the abuse of medical charities. Personally I have always seen and still see a great danger in tempting people to demand and take gratuitously services they can and should pay for. The gradual undermining of individual honesty and responsibility will prove a nail to the coffin in which republican institutions, founded as they are on equality, mutual obligations and probity, may some day be

buried. The impulse given by the profession has also resulted in the foundation of the Willard Parker Hospital, which should have been one of many, and of the Minturn Hospital, in the improvement of the factory laws referring to children, in school inspection, which should be more comprehensive and more influential than it is, and in ridding the people of part of its quacks. How difficult that office is and how serious the danger connected with it, in spite of the persistent and well-directed efforts of the New York County Medical Society, can be appreciated only by those who know the extent of quackery in all classes of the public, which for proprietary medicines alone pays two hundred millions annually, and the sympathy it meets even with the alleged spiritual heads of mankind. Says Herbert Spencer: "The incorporation of authorized practitioners has developed a trades-union spirit which leads to jealousy of the unincorporated practitioners, that is, the irregulars." In the solitude of his study, and communing with himself, he did not learn the needs of the people and the necessity of protecting their health against their own ignorance and prejudice, and of offering them unadulterated and unselfish science and art, as you feel bound to furnish them pure water and food, sometimes, or often, against their will. There are but few of us that have a high opinion of the discernment and discretion of a large part of the public. For there is too much clairvoyance, Christian lack of science, medical sectarianism and medicine-chest quackery, and too much medical dilettantism amongst our well-clad and well-fed, semi-instructed, but uncultured and mentally unbalanced classes.

Meanwhile, the profession, and I amongst them, have plodded on. Untold thousands have arisen this half century of mine, or passed away. There were the wage workers, the teachers, the pathfinders. There were those who fought disease or epidemics bravely and survived, or those who died in a single task and left their small children hungry. It is true the time has passed by when the doctor was killed when he lost a patient. That is different now; we are more civilized, we are satisfied with murdering his good name. There were, there are, only few that gained repute, local or national. If there were it was not always to their advantage. Harvey and Gall, like many others that worked for science, lost their practice and livelihood; still without them there would have been no Bichat and no Virchow. The brave physician's work was always hard, for it is as difficult to save one life as it is easy to kill a thousand. That is why I cannot feel enthusiasm for the doctor who is occasionally puffed for leaving his humane work to participate in the killing, nor for the injustice of history, that mentions a thousand generals to one physician. Some of what I have said may be objected to. But I know that the views I expressed were mine always, and are not engendered by advancing age.

What after all is age? The boundary line between the young and the old is not, I take it, in the bald head or the gray whiskers, but in the change of a man's ambitions, motives and purposes, and of his relations to the world and *its* ways and aims. It is true that I have been told even to-night that I am seventy, in the pleasant way you have of showing your condolence. I can bear it as long as those not so old as I am accused of being treat me as their equal and call me young — for an aged man.

Now, may I betray to my younger colleagues — I like to talk to them — how I succeeded in getting along with my age and with the young, and remain — as many say — one of them? By arranging and gradually developing a life programme, I tried to learn from my books, my patients and my colleagues, sometimes even from midwives and old women. Ambrose Paré admitted that he hated quacks only when they could teach him nothing. I think, also, I did my duty to my patients and my colleagues.

In accordance with my democratic schooling, I was fortunate enough to have respect for the individual. That is why I found it easy to imagine myself in the place of a patient, and to spare his feelings if I could not preserve his life. Where you cannot save you can still comfort. I never told a patient he had to die of his illness, and hope I shall never be so careless or so indolent as to do so in the future. The magnetic needle of professional rectitude should, in spite of occasional deviations, always point in the direction of pity and humanity. Another lesson I learned early was this, that my patient had to be treated, and not the name of his disease, and, also, as my illustrious medico-poetical friend proclaimed in Washington a few days ago: "'Tis not the body, but the man is sick." My medical education dated from a dangerous era. Symptomatic diagnosis had been replaced by the anatomic. Rokitansky and Skoda cared more for the dead bodies than the living convalescents; the former proclaimed loudly that the only thing scientific in medicine was the autopsy, and the Nihilism of Vienna was that time's modern therapy. You and the patient met only twice — first, when you made the diagnosis of his case; the second, at his autopsy. Fortunately in F. Nasse I had fifty years ago a teacher of unadulterated humanity, combined with all the scientific eagerness of his mental youth of exactly seventy years. From him also, though he was not a democrat nor a revolutionist, I learned the sacredness of individual right and life which I never ceased to respect. Thus I learned two things: first, never to let up in my care of individual life when entrusted to me; secondly, that no single political or religious creed ever owns, or controls, or interferes with the dictates of humanity and common sense. Man is above theories or creeds.

Further, my young friends, I never thought I owned my patients and never grudged my colleagues *their* own. I never shrugged my shoulders when they were well spoken of, and did not believe that my reputation suffered when they were eulogized. I always preferred patients should come to me, to my running after them. When a patient left me for some other doctor I may have felt chagrined, but I did not blame the doctor he called in. When a doctor robbed me of a patient by hook or crook, or both,— such things do happen, I believe, even now, — I was sorry for the doctor and for the profession, and glad I was not he. To compete honestly I think is easy for a gentleman; to bear dishonest competition should be easy, but it worries. Not to take honest competition on the part of others kindly, shows disregard for the rights of others, either doctors or patients, and bad citizenship; or it proves premature old age, with all its occasional avidity and venomous jealousy. Now, the morbid bitterness of old age, of which we hear, I have not experienced as yet, and if, or when, it will come with the increasing atherosis of my brain arteries, I wish and trust somebody will tell me. There are, besides, a few tricks of mine which prevented both my brains and heart from getting altogether too rusty. There was a time — not so long ago — when I was the youngest everywhere. When I got bravely over that, I always kept in touch with the young, either students or colleagues or writers. Literature is always young, students and colleagues sometimes too much so. But they suited me exactly, for they kept me in touch both with my former self and the new era. Mainly in the last decade or two, the young men were compelled to learn many new things which, though Leuwenhoek two hundred years and Henle sixty years ago saw the holy land from afar, could not have been believed possible by a Sydenham, or Boerhave, or Haller, or even Bichat. We older men are either behind the time, or we have to unlearn much of our dearly bought stock and to learn with the young men, or from them. To the young amongst you all, particularly to my own accomplished assistants both in private and official positions, I here express my thanks, not only for the direct instruction I have received from them, but for the imponderable intellectual and moral influence the intercourse between intelligent creatures must always exert. Then there is another trick. When your anger rises within you over some unjust thing, be not afraid of showing the blush on your face; when an iniquity is perpetrated, resent it. Be not afraid of slapping the cheek that deserves it in private or in public. Personally I hate enmities; they always fretted and worried me and gave me sleepless nights; but I never was afraid of the enemies I made as long as I fought the

battle of professional or civic decency and dignity. If there be a bad, or a ludicrous, or a dangerous man, and if he feels offended by my telling him of his misdeeds and my trying to protect the profession or the community against him, here I plead guilty, and I shall do it again for evermore. When I shall stop, then call me old.

The facility of obtaining a diploma and the license to practise, formerly greater than now, has so filled the profession with undesirable men and women as to crowd the ideal as to what a physician should be to the wall. It is only with the growing difficulty of matriculation and increasing severity of examinations that the number of underweight doctors becomes smaller. With this increase, and with growing competition, the methods of obtaining a livelihood in every business and vocation become more doubtful. That is why the morals of the profession have been subjected to a most severe strain. Moreover, the commercialism which is the signature of the end of our century has invaded industries, arts, science and the professions, the medical professions more in Europe — as I could easily prove — than in America.

This superiority of the moral tone in our American profession is due to the innate pride of our citizens, and has certainly been commemorated or preserved by the teachings of the code of the American Medical Association. So settled is that habit of modesty and pride amongst us that when finally we resolved in the Medical Society of the State of New York that no law-book was required to guide our methods of intercourse, the observance of the rules valid amongst gentlemen became even stricter in the profession of the State of New York than ever before. Still there *are those* who are infected with the meretricious spirit of the times and think they cannot wait for success. Indeed, no profession should expect to be exclusively composed of men of stern character and incorruptible probity. The methods of reaching their ends are therefore, as the case may be, those of vanity, or obtrusiveness, now and then of dishonesty.

Those of us, however, who crave notoriety in the belief that the majority of the public have as little brains as fish that take every bait will meet reporters at the bar or in the sacred concealments of their offices, get into the newspaper columns with their wonderful electrical discoveries, miraculous cases, unheard-of operations, and long titles, the least of which at present is "professor."

In the words of a great cynic, "What are you going to do about it?" There are those whose egotism and vanity are not controlled by any regard for the public good and who are acrobatic experts in the art of keeping on the fence between honorable professional behavior and shameless quackery. If they knew how ludicrous they are, and how pitiful they appear in the eyes of the honest crowd about them, they would do better. And here is a word to the young. I am afraid we old men are past changing, but it is a failing in our national character to be always cordial, always courteous, always handshaking. We do not identify the sin and the sinner; we abhor the former, and are too good-natured to shun the latter. If there be a danger to our morals and our politics, it is there. If you, the young men in the profession, will refuse approval and honors to men whose actions and methods you condemn, if you will only show them that your heart is chilled against them — some of them are in public positions — there will soon be an end to offences which need not always result from wickedness, but bad taste only. There are those indeed amongst the vain who fear the display of bad taste more than the perpetration of sin.

After all, however, when I look backward, I really do not believe that the moral tone of the profession is lower than circumstances will always necessitate in this period where trade is everything. There were jealousy, strife and competition at all times; and men were always human. The "good old times" is an ideal that, while its consummation is too far ahead or beyond the horizon altogether, is searched for backward. Doctors were always what their time, their people, their surroundings made them.

The mutual relation of physicians I have seen improving during my own time, that is, within half a century. Imagine that twice that time, only one century ago, the literature on the behavior of physicians toward one another was very copious; evidently, the need of it was great. At that time consultations between doctors were declared by a well-meaning writer to be impossible, purposeless, time-killing and "revolting," and as late as 1783 famous I. P. Frank advised seriously to call in the police to arbitrate and restore order when doctors disagreed in their consultations. That was only a century after the polite scoundrel of Molière proposed to his colleagues: "Let me bleed him, and I let you purge him."

Not very long before my time the amenities of professional intercourse cannot have been very great, when Lisfranc called Dupuytren the butcher of the Hôtel-Dieu, and Dupuytren dubbed Lisfranc the "murderer of the Charité." One of the later publications on the mutual relations of doctors was that of Percival in 1807; it was made the law-book of the American Medical Association in 1847. My illustrious friend in Washington, Dr. S. C. Busey, who upholds it as a necessity, still proclaims that the rule forbidding consultations with sectarian practitioners altogether should be so modified as to permit them in cases of emergency. That is what the Medical Society of the State of New York made its policy in 1882. It was a number of years afterwards that the code was abolished altogether. As far as I am personally concerned, I am still of the opinion expressed years ago that there are no statistical data to prove that more sins are committed by gentlemen without than with a written code.

On the other hand, I cannot see why whatever differences there are between those who adhere to the code of ethics, and those who believe in and act on the same principles, could not be easily adjusted. Books are made for the use of men, by men; and no fires are lit any more in this country under the impression that differences of opinion can be killed like human bodies. The spirit does not burn like flesh. Why differences of opinions as to the indispensability of a written code should lead to animosity to such an extent as to preclude the possibility of a peaceful discussion, I have never been able to conceive.

What, indeed, does all the discord amount to? The whole profession agrees about the inadvisability of consultations, in the very interest of the patient, with a certain class of medical men, in the average cases of illness. In emergency cases such consultations are permitted for reasons of humanity by both parties of the profession. One of them bases its action on the written code of ethics, the other deems a written code unnecessary for its guidance. It is my opinion that our successors will hardly believe we ever were serious men when they learn that the enlightened and public-spirited profession could go to war over differences of motives and methods when the end in view was the same.

Mr. Chairman, I have been, more than I deserve, praised as a physician, as a teacher, as a citizen. My own remarks referred mainly to the first, for I am proud of the profession to which I belong. Every individual professional man, if he be, as mostly, a good man, and the collective profession have always proved good and statesmenlike citizens. They do not, I grieve to say, take much personal part in the politics of the city or country, but whoever knows the exhausting life the medical man is leading cannot wonder we are not often seen in the political arena. That is deplorable, and my word to the young is to lend a hand to this country of their birth, or of their adoption, for it is in America that many political, economic and social problems will have to be solved. In every other respect there is no man that gives more and gets less than the physician. And the profession at large?

There is no interest connected with the life and health of the community that was not fostered by the co-operating physicians. The Sanitary Commission of the Civil War contained illustrious names like Agnew and Krackowizer. Physicians know best or feel most intensely that a people stricken with poverty and ignorance, and decimated by preventable sickness, should be deemed an anachro-

nism in this century, and that, as Virchow expresses it, every epidemic is a warning that should teach a statesman that there is a preventable or curable disorder in the organism of the Commonwealth. Unfortunately it is too often true, what Anarcharsis said of Athens, that the wise men do the talking and the others the ruling. If that was not so, it would look impossible that a quarter of a million, asked for once, in behalf of the establishment of what is to be at the same time a life-saving station and an instruction camp, should be refused, while a million a day is spent on destruction; or that an appropriation required for the solution of problems connected with the mental health and disease of tens of thousands of our fellows should be withheld. The battles against prejudice, shortsightedness, and incompetence are always fought by the medical profession, which unfortunately is too often not consulted, and that, gentlemen not of the medical profession within the hearing of my voice, is what binds us together and renders us proud of one another, with that altruistic unselfishness which is our sacred egotism. To look back upon a long life spent in that profession is my greatest satisfaction, and to know that no changing influence of the day is able to divert the profession from its manifest destiny and plain duty of being and remaining the teacher and protector of the race in all that pertains to its physical and moral welfare is a boon greater than endless millions or worldly power. Of that profession I have been one, these many decades. That is why I am here, distinguished and honored more than I personally deserve, but understanding perfectly well that my brethren have come here with the sentiment of professional good fellowship, and the lay friends to do homage to their greatest benefactors, namely, medical science and the American medical profession, in the person of one of its fellows.

What I have said, gentlemen, may look to many rather like an academic discourse than an after-dinner talk. It remains for me to thank you for your patience; remember, however, this happens only once in seventy years. I have to express my thanks for many more things. Consider my recollections of nearly half a century. I came here a foreigner, and never was made to feel I ever *was* a foreigner. I emerged from a European state prison to breathe the pure air of a free country. My political and social ideals were not all fulfilled, it is true, for nothing is perfect that is human; that is why it was still necessary to be an abolitionist and a mugwump, with the perfect assurance — which I still hold — that some time or other the minority turns out to be the majority. I imported nothing but a willingness to work hard and to be modest and grateful. I joined a profession that owed me nothing, and knew still less of me than I knew of the profession. The kind reception I met with surprised me, for I knew that a foreigner would not be so treated in the country I had escaped from. I had but little except the knowledge of my duties and responsibilities. With that small capital I was received and allowed to co-operate as an equal in whatever concerned the profession and its relations to the commonwealth, city or country. I repeat only what everybody knows, so I do not boast when I say that one by one almost every place of honor the profession had at its disposal has been mine. Of *this* day I must not speak, for I cannot do so without tears in my throat. Who is there that wondered that when many years ago the great honor of a responsible position in a foreign country was offered me, it took me a single minute only to decline?[2] I was, I am, rooted in the American profession, that I have observed to evolve without governmental aid, out of its own might, to become equal to any on the globe. I was, I am, rooted in the country that was my ideal when I was young, my refuge when, alone and persecuted, I stole away, and always, clouds or no clouds, my sunny hope forevermore.

And this "Festschrift"! These last weeks I wondered many a time, and I do so now, that I should be the receiver of that honor. When many years ago heroes like Virchow, and then again Henoch, were to be held up for the admiration of the medical world, on both occasions I had the privilege of co-operating in the expression of the estimation in which they were held. This distinction is rare even in the country of my birth. In our country I know only of two such dedicatory volumes, the "Wilder Quarterly-Century Book of 1893," dedicated to Professor Burt Green Wilder, of Cornell University, and the volume presented to Professor W. H. Welch, of Johns Hopkins, once a hospital assistant of mine, now one of my honored masters, yesterday evening. That the country which adopted me, and gave me a peer amongst peers, opportunities to work, should in true cosmopolitan spirit adopt this method, rare enough in Germany, of raising a man to the greatest possible height of distinction and making him shine above all men — and this man I — is far, far beyond what was the culmination of all my possible hopes. That men here and the world over should respect me to the last day of my life was the extent of my pardonable wishes. If nothing else, however, this book, the work of others, will carry my name to posterity. I accept it with the gratitude due for that immeasurably rich gift. Amongst its contributors I see the names of many old friends, and some whose faces I never saw; the names of men from all civilized countries, honored in the realm of medical literature, known to one another by their achievements, separated by seas and boundary lines, but working for the same ends in the service of science and of mankind. Aims, methods and persistency are common to the medical profession of all countries. On its flag is inscribed what should be the life rule of nations: Fraternity and solidarity.

[2] Dr. Jacobi was offered a professorship in the University of Berlin. — ED.

MEDICAL NOTES.

REPRESENTATION OF THE AMERICAN DERMATOLOGICAL ASSOCIATION AT PARIS. — At the meeting of the American Dermatological Association held in Washington in connection with the Congress of American Physicians and Surgeons, a Committee was appointed consisting of Dr. J. Nevins Hyde, of Chicago, Dr. Henry W. Stelwagon, of Philadelphia, and Dr. T. Caspar Gilchrist, of Baltimore, to represent the Association at the International Dermatological Congress to be held at Paris in early August, and to extend a warm invitation, in the name of the Association, to the members of that Congress to hold the next international meeting in this country in New York. The Committee was further instructed, in the event of the Congress giving a favorable response, to present the name, and urge the election, of Prof. James C. White, of Boston, the first President of the American Dermatological Association, and an honorary member of the French and Italian dermatological societies, for the presidency of that Congress.

THIRTEENTH INTERNATIONAL MEDICAL CONGRESS. — At a meeting of the American National Committee of the Thirteenth International Medical Congress, held at Cosmos Club, Washington, May 2d, with Dr. W. W. Keen in the chair, the secretary read the minutes of the preceding meeting and reported that already about two hundred American physicians had joined the Congress. It was unanimously voted that the President of the American Medico-Psychological Association be added to the Committee; and further voted that the organizations whose presidents compose the Committee be requested to contribute to the expenses of said Committee.

A NEW SOCIETY FOR PATHOLOGY AND BACTERIOLOGY. — At a meeting recently held in Washington of a number of pathologists and bacteriologists, a new national society was decided upon. A committee of seven was appointed to arrange plans of organization: William T. Councilman, Harold C. Ernst, Simon Flexner, Ludvig Hektoen, William T. Howard, Jr., W. H. Park, Theobald Smith, were the original promoters of the plan.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, May 9, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 72, scarlatina 48, measles 89, typhoid fever 5.

TRANSMISSION OF PARASITIC DISEASE BY INSECTS. — At the next meeting of the Boston Society for Medical Improvement Dr. Theobald Smith will read a paper entitled "The Comparative Etiology of Malarial Diseases." During the course of the evening Dr. Smith will demonstrate, under the microscope, the malarial mosquito. This paper is of special interest on account of the valuable pioneer work in which long ago Dr. Smith tried to show the transmission of parasitic disease by insects.

FIFTIETH ANNIVERSARY OF THE NORFOLK DISTRICT MEDICAL SOCIETY. — Exercises commemorative of the fiftieth anniversary of the Norfolk District Medical Society were held at Hotel Vendome, Tuesday, May 8th. The address was delivered by Dr. H. C. Ernst, an historical sketch by Dr. C. Ellery Stedman, and after an enjoyable dinner a number of felicitous speeches were made by representative physicians of Boston.

BACTERIOLOGICAL LABORATORIES OF THE RHODE ISLAND HOSPITAL. — The new Bacteriological Laboratories of the Rhode Island Hospital were formally opened Thursday, May 10th. Drs. W. T. Councilman, J. W. C. Ely and G. Alder Blumer made remarks appropriate to the occasion.

METEOROLOGICAL RECORD

For the week ending April 28th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.		Relative humidity.			Direction of wind.		Velocity of wind.		We'th'r. *		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S...22	29.97	52	60	44	71	100	86	N.	N.	4	10	O.	R.	.12
M...23	29.89	50	58	43	90	96	93	N.	E.	8	6	O.	O.	.03
T...24	29.96	48	52	43	94	75	84	N.	N.	8	7	R.	C.	.10
W...25	29.96	52	64	39	48	33	40	N.W.	N.W.	10	13	C.	C.	
T...26	29 81	54	64	45	34	49	42	N.W.	E.	13	4	F.	C.	
F...27	29.80	46	51	40	47	53	50	N.W.	N.W.	10	10	C.	F.	
S...28	30.01	46	52	39	53	68	60	N.	W.	10	10	O.	O.	

☞

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☞ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, APRIL 28, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Typhoid fever.	Diphtheria and croup.	Measles.
New York	3,854,594	1538	534	21.12	12.60	.48	2.82	1.62
Chicago	1,819,226	—	—	—	—	—	—	—
Philadelphia	1,366,832	618	210	21.76	29.20	2.88	3.84	4.96
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	237	62	27.84	24.48	1.44	4.32	1.92
Baltimore	506,389	222	62	16.20	15.30	1.35	2.25	1.35
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	153	49	24.05	14.95	9.75	1.95	1.30
Washington	277,000	110	23	22.34	2.47	3.64	.91	.91
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	92	21	21.60	22.68	—	2.16	—
Nashville	87,784	—	—	—	—	—	—	—
Charleston	60,166	28	7	7.14	10.71	—	—	—
Worcester	111,732	38	16	15.78	18 41	—	—	—
Fall River	103,142	25	8	16.00	16.00	—	—	4.00
Cambridge	92,820	23	8	21.85	17.40	4.35	8.70	—
Lowell	90,114	31	9	16.15	19.38	—	—	—
New Bedford	79,511	31	13	16.15	12.92	—	3.23	—
Lynn	68.218	12	3	25.00	16 66	—	—	—
Somerville	64,394	20	8	25.00	20.00	—	5.00	—
Lawrence	59,072	17	13	5.88	17.64	—	—	—
Springfield	58,286	29	11	6.90	20.70	—	3.45	—
Holyoke	44,510	24	11	8.30	12 45	—	—	—
Brockton	38,750	—	—	—	—	—	—	—
Salem	37,723	21	6	9 32	4.76	4.76	—	—
Malden	36,421	6	1	—	16.66	—	—	—
Chelsea	34,235	10	1	—	—	—	—	—
Haverhill	32,651	10	—	—	50.00	—	—	—
Gloucester	31,426	5	—	—	—	—	—	—
Fitchburg	30,523	5	—	40.00	20.00	—	—	—
Newton	30,461	12	2	25.00	5.88	—	16.66	—
Taunton	28,527	12	3	28.56	14.28	—	—	—
Everett	28,102	7	3	50.00	—	—	—	—
Quincy	24,578	4	—	—	—	—	—	—
Pittsfield	23,421	—	—	—	—	—	—	—
Waltham	22,791	7	—	28.56	14.28	14.28	—	—
North Adams	21,583	4	1	25.00	—	—	—	25.00
Chicopee	18,316	11	6	—	9.09	—	—	—
Medford	17,190	8	4	12.50	12.50	—	—	—
Newburyport	15,936	7	—	—	14.28	—	—	—
Melrose	14,721	6	3	—	—	—	—	—

Deaths reported 3,405; under five years of age 1,156; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 727, acute lung diseases 539, consumption 379, diphtheria and croup 98, measles 72, typhoid fever 54, whooping-cough 31, diarrheal diseases 28, erysipelas 25, scarlet fever 25, cerebrospinal meningitis 15.

From whooping-cough New York 21, Pittsburg 2, Boston, Washington, Providence, Cambridge and Lynn 1 each. From diarrheal diseases New York 13, Pittsburg 5, Baltimore 4, Fall River 2, Boston, New Bedford, Somerville and Holyoke 1 each. From erysipelas New York 16, Boston 5, Providence 3, Medford 1. From scarlet fever New York 13, Philadelphia 6, Boston 4, Providence and Everett 1 each. From cerebro-pinal meningitis Boston 4, New York, Worcester and Somerville 3 each, Lynn and Newton 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,295, for the week ending April 21st, the death-rate was 21.3. Deaths reported 4,747: measles 159, whooping-cough 123, diphtheria 56, diarrhea 32, scarlet fever 30, fever 28, small-pox (Liverpool) 3.

The death-rates ranged from 12.9 in Birkenhead to 30.6 in Plymouth: Birmingham 23.2, Bradford 18.4, Croydon 16.7, Gateshead 21.0, Hull 17.3, Leeds 19.6, Liverpool 26.9, London 20.6, Manchester 28.8, Newcastle-on-Tyne 18.9, Nottingham 17.2, Portsmouth 17.7, Sheffield 22.7, Swansea 13 8, West Ham 17.1.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MAY 5, 1900.

(BY CABLE FROM ASIATIC STATION.)

W. E. HIGH, assistant surgeon, detached from the "Manila" and ordered to the hospital.

D. G. BERBE, assistant surgeon, detached from the "Yorktown" and ordered to the "Isla de Luzon."

T. A. BERRYHILL, surgeon, detached from the "Monongahela" on reporting of relief and ordered home and to wait orders.

W. M. WHEELER, passed assistant surgeon, detached from the "Vermont," May 3d, and ordered to the "Kearsarge."

G. H. BARBER, passed assistant surgeon, detached from the "Kearsarge" and ordered to the "Monongahela."

D. H. MORGAN, assistant surgeon, ordered to the "Vermont," May 3d.

J. C. BOYD, medical inspector, detached from duty as assistant to Bureau of Medicine and Surgery, Navy Department, and ordered to the "New York" as fleet surgeon of the North Atlantic Station.

P. FITZSIMONS, medical inspector, detached from the "New York" as fleet surgeon of the North Atlantic Station and ordered to proceed home and wait orders.

J. D. GATEWOOD, surgeon, detached from the Bureau of Medicine and Surgery, Navy Department, May 8th, and ordered to duty as assistant to Bureau of Medicine and Surgery, same day.

C. D BROWNELL, passed assistant surgeon, ordered to the Naval Training Station, Newport, R. I.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE UNITED STATES MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING MAY 3, 1900.

BAILHACHE, P. H., surgeon. Detailed to represent the Service at the Convention for the Decennial Revision of the U. S. Pharmacopeia at Washington, D. C., May 2, 1900. April 30, 1900.

WASDIN, EUGENE, surgeon. Detailed to represent the Service at the meeting of the American Medical Association at Atlantic City, N. J., June 5–8, 1900. May 1, 1900.

COBB, J. O., passed assistant surgeon. To report to Chairman of Board of Examiners for examination to determine fitness for promotion to the grade of surgeon. April 30, 1900.

GREDDINGS, H. D., passed assistant surgeon. Detailed to represent the Service at the Convention of the Decennial Revision of the U. S. Pharmacopeia at Washington, D. C., May 2, 1900. April 30, 1900.

ROSENAU, M. J., passed assistant surgeon. Detailed to represent the Service at the meeting of the American Medical Association at Atlantic City, N. J., June 5–8, 1900. May 1, 1900.

TABB, S. R., assistant surgeon. Upon being relieved from duty at Savannah, Ga., to report in person at the Bureau for further orders. May 3, 1900.

MCMULLEN, JOHN, assistant surgeon. Granted three days' extension of leave of absence. April 29, 1900. Granted three days' extension of leave of absence. May 1, 1900.

VON EZDORF, R. H., assistant surgeon. Relieved from duty at New Orleans, La., and directed to proceed to Savannah, Ga., and assume command of the Service. May 3, 1900.

FRICKS, L. D, assistant surgeon. Relieved from duty at Washington, D. C., and directed to proceed to Manila, P. I., and report to the chief quarantine officer for duty. April 27, 1900.

CORPUT, G. M., assistant surgeon. To proceed to Mullet Key, Fla., and assume command of the Detention Camp and the steamer "W. D. Bratton." April 30, 1900.

STANSFIELD, H. A., assistant surgeon. Relieved from duty at Honolulu, H. I., and directed to proceed to Manila, P. I., and report to the chief quarant ne officer for duty. April 27, 1900.

MAGUIRE, E. S., hospital steward. Relieved from duty at Evansville, Ind., and directed to proceed to New York, N. Y. (Stapleton), and report to the medical officer in command for duty and assignment to quarters. May 1, 1900.

MASON, M. R., hospital steward. To proceed to New York, N. Y., and report to the medical purveyor for temporary duty. April 28, 1900.

HOLT, E. M. hospital steward. To proceed to Portland, Me., and report to the medical officer in command for temporary duty and assignment to quarters. April 28, 1900.

BOARD CONVENED.

Board convened to meet at Washington, D. C , May 3, 1900, for the examination of Passed Assistant Surgeon J. O. COBB, to determine his fitness for promotion to the grade of surgeon. Detail for the Board: Surgeon J. H. WHITE, Chairman; Surgeons R. M. WOODWARD and G. T. VAUGHAN, Recorder.

SOCIETY NOTICES.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. — The last regular meeting of the Society for the season 1899-1900 will be held at the Medical Library, 19 Boylston Place, on Monday evening, May 14th, at 8 o'clock.

Dr. Edward H. Nichols will speak on "The Etiology of Cancer; Observation of the Work in Foreign Laboratories."

Dr. Theobald Smith will read a paper entitled "The Comparative Etiology of Malarial Diseases."

ARTHUR K. STONE, M.D., *Secretary*, 657 Boylston Street.

SUFFOLK DISTRICT MEDICAL SOCIETY. — The Section for Clinical Medicine, Pathology and Hygiene will hold its last regular meeting at 19 Boylston Place, Wednesday, May 16, 1900, at 8 P. M.

At 8 o'clock: Dr. G. G. Sears will present a short communication entitled "A Note on Rectal Feeding in Peptic Ulcer."

At 8.10 o'clock: Dr. H. F. Hewes, "An Achlorhydria."

At 8.20 o'clock: Dr. M. P. Smithwick, "Eye-Strain as a Cause of Gastro-intestinal Disturbances."

J. BERGEN OGDEN, M.D., *Secretary*,
Harvard Medical School, Boston.

RECENT DEATH.

CHARLES CARROLL STREET, M.D., M.M.S.S., died in Boston, May 7, 1900, aged sixty-four years.

BOOKS AND PAMPHLETS RECEIVED.

First Annual Report of the State Board of Insanity of Massachusetts for the Year ending September 30, 1899. Boston, 1900.

Annual Report of Major Frank J. Ives, Surgeon U. S. Volunteers, Chief Surgeon, Department of Matanzas and Santa Clara. 1899.

Transactions of the Louisiana State Medical Society at its Twentieth Annual Session, held at New Orleans, La., May 16, 17, 18, 1899.

Twenty-ninth Annual Report of the Trustees of the City Hospital of the City of Worcester for the Year ending November 30, 1899. Worcester. 1900.

Some Remarks on the Symptoms and Operative Treatment of Bronchocele, especially in Relation to Graves' Disease. By Francis J. Shepard, M.D. Reprint.

A Hand-Book for Nurses. By J. K. Watson, M.D. (Edin.). American edition under the supervision of A. A. Stevenson, A.M., M.D. Philadelphia: W. B. Saunders. 1900.

Anesthetics: Their Uses and Administration. By Dudley Wilmot Buxton, M.D., B.S. Third edition. London: H. K. Lewis. Philadelphia: P. Blakiston's Son & Co. 1900.

Ulcer of the Stomach and Duodenum and its Consequences. By Samuel Fenwick, M D., F.R.C.P., and W. Soltau Fenwick, M.D. (Lond.), M.R.C.P. Philadelphia: P. Blakiston's Son & Co. 1900.

Transactions of the New York Obstetrical Society from October, 1898, to October, 1899. With Complete Index. New York: Published by the American Gynecological and Obstetrical Journal. 1899.

Paralytic Deformities of the Lower Extremities; The Principles of their Surgical Treatment. By E. Noble Smith, F.R.C.S. (Edin.), L.R.C.P. (Lond.), etc. Illustrated. London: Smith, Elder & Co. 1900.

Elements of Clinical Bacteriology for Physicians and Students. By Dr. Ernst Levy and Dr. Felix Klemperer. Second enlarged edition. Authorized translation by Augustus A. Eshner, M.D. Philadelphia: W. B. Saunders. 1900.

Transactions of the Obstetrical Society of London. Vol. XLI, 1899, with a List of Officers, etc. Part IV for October, November and December. Edited by John Phillips, M.A., M.D., Sr. Secretary, and Percy Boulton, M.D., London.

Transactions of the American Dermatological Association at its Twenty-third Annual Meeting, held in the College of Physicians, Philadelphia, Pa., May 30 to June 1, 1899. Official Report of the Proceedings by George T. Jackson, M.D., Secretary.

Twentieth Century Practice: An International Encyclopedia of Modern Medical Science. By leading authorities of Europe and America. Edited by Thomas L. Stedman, M.D., New York City. In 20 volumes. Vol. XIX, Malaria and Micro-organisms. New York: William Wood & Co. 1900.

Essentials of Diagnosis, arranged in the Form of Questions and Answers, prepared especially for Students of Medicine. By Solomon Solis-Cohen, M.D., Professor of Clinical Medicine, etc., and Augustus A. Eshner, M.D., Professor of Clinical Medicine. Illustrated. Philadelphia: W. B. Saunders. 1900.

Essentials of Surgery, together with a Full Description of the Handkerchief and Roller Bandage; arranged in Form of Questions and Answers, prepared especially for Students of Medicine. By Edward Martin, A.M., M.D. Illustrated. Seventh edition, revised and enlarged, with an appendix, etc. Philadelphia: W. B. Saunders. 1900.

Stricture of the Esophagus as a Complication and Sequel of Typhoid Fever; Report of a Case Cured by Abbe's Operation. What Should be the Position of the Surgeon Relative to the Treatment of Appendicitis? A Contribution to the Surgery of the Common Bile-Duct; Report of a Case of Choledochenterostomy. By John E. Summers, Jr., M.D., Omaha, Neb. Reprints. 1899-1900.

Original Articles.

THE IDEAL RATION FOR AN ARMY IN THE TROPICS.*

BY EDWARD L. MUNSON, M.A., M.D.,
Captain and Assistant Surgeon, United States Army, Washington Barracks, D. C.

(Continued from No. 19, p. 492.)

THE following table, compiled from data elaborated by Atwater and Bryant,[82] shows the chemical composition and nutrient values of the various articles of the ration; the soap and candle, coffee and seasoning components, which are merely accessory to the nutritive articles, and possess little if any force value, not being taken into consideration, as requiring no alteration in quantity for the tropics:

Articles of Ration.	Quantities per ration, ounces.	Per Cent. of				Amounts Present in Ration (Grammes).				Fuel Value per ration, Calories.
		Water.	Protein.	Nitrogen.	Fat.	Carbohydrates.	Protein.	Nitrogen.	Fat.	Carbohydrates.	
Fresh Beef (fore and hind quarters)	20	50.5	14.7	2.35	15.8		83.35	13.3	89.5		1,180
Or Fresh Mutton	20	43.8	16.3	2.60	22.2		92.4	14.7	125.8		1,440
" Pork	12	16.2	16.2	2.59	63.2		55.08	8.8	225.08		2,187
" Bacon	12	16.8	9.2	1.47	61.8		31.28	4.89	210.12		2,045
" Salt Beef	22	49.6	14.2	2.27	22.8		88 6	14.16	142.3		1,534
" Dried Fish (Cod)	14	40.3	16	2.56	.4		63.52	10.16	1.59		276
" Fresh Fish (Cod, whole)	18	38.7	8	1.28	.2		40.8	6.5	1.02		155
Flour	18	12.8	10.8	1.55	1.1	74.6	55.08	7.9	5.6	380.46	1,850
" Soft Bread	18	35.4	9.5	1.36	1.2	52.8	48.45	6.9	6.12	269.28	1,395
" Hard Bread	16	9.2	14.4	2.30	1.3	72.8	65.7	10.44	5.9	330.5	1,712
" Cornmeal	20	12.9	8.9	1.41	2.2	75.1	50.4	7.99	12.4	425.8	1,9-6
Beans	2 2-5	13.2	22.3	3.56	1.8	59.1	15.16	2.42	1.22	40.18	240
Or Rice	1 3-5	12.4	7.8	1.24	.4	79	3.5	.56	.18	35.55	163
" Peas	2 2-5	10.8	24.1	3.85	1.1	61.5	16.38	2.62	.75	41.8	246
" Hominy	1 3-5	11.9	8.2	1.31	.5	78.9	3.69	.59	.27	35.5	172
Potatoes	16	78.9	2.1	.336	.1	18	9.5	1.52	.45	81.7	380
Or Potatoes 80 per ct. and onions 20 per ct.	16	78.8	1.9	.312	.16	16.1	8.6	1.4	.72	73.09	340
" Potatoes 70 per ct. and canned Tomatoes 30 per ct.	16	83.7	1.8	.288	.13	13.8	8.16	1.30	.58	62.59	297
Dried Fruits (average of varieties issued)	2	29.5	2.09	.334	1.8	59.7	1.18	.19	1.02	33.8	147
Sugar	2 2-5	2.4 per cent. nitrogenous matter present, probably not protein.				95				64.6	264
Or Molasses	16-25 gill.	25.1				69.3				41.25	198
" Cane Syrup	16-25 gill.					69.5				41.36	198

From the above table it is apparent that the ordinary variation of the articles composing the food of the soldier, as contemplated in the establishment of the ration, does not furnish dietaries of the same proximate composition or nutritive value. How great this difference may be, from day to day, it is of importance to determine.

Using the figures just given, the proximate composition and nutrient value of the maximum quantity of food material which may be drawn as a daily allowance by the United States soldier is seen to be as follows:

Articles.	Quantity in ounces.	Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories.
Fresh beef	20	89.50	—	83.35	13.30	1,180
Flour	18	5.60	380.46	55.08	7.90	1,850
Beans	2.4	1.22	40.18	15.16	2.42	240
Potatoes	16	.45	81.70	9.30	1.52	380
Dried fruit	2	1.02	33.80	1.18	.19	147
Sugar	2.4	—	64.60	—	—	264
Total	60.8	97.79	600.74	164.27	25.33	4,061

Total carbon, 427.03 grammes; nitrogen to carbon, 1:17.

In the following table are included those articles of food which, taken together, may be considered to constitute the ordinary ration for troops in the field or during campaign:

Articles.	Quantity in ounces.	Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories.
Bacon	12	210.12	—	31.28	4 99	2,085
Hard bread	16	5.90	370.50	65.70	10.44	1,712
Beans	2.4	1.22	40.18	15.16	2.42	240
Dried fruit	2	1.02	33.80	1.18	.27	147
Sugar	2.4	—	64.60	—	—	264
Total	36.8	218.26	489.08	113.32	18.12	4,448

Total carbon, 432.78 grammes; nitrogen to carbon, 1:23.8.

A selection of food stuffs which may fairly be assumed to represent the usual dietary of the soldier in garrison is shown in the following table:

Articles.	Quantity in ounces.	Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories.
Fresh beef	20	89.50	—	83.35	13.30	1,180
Soft bread	18	6.12	269.28	48.45	6.90	1,355
Potatoes and onions	16	.72	73.09	8.60	1.40	340
Dried fruit	2	1.02	33.80	1.18	.19	147
Sugar	2.4	—	64.60	—	—	264
Total	58.4	97.36	440.77	141.58	21.79	3,296

Total carbon, 344.57 grammes; nitrogen to carbon, 1:16.3.

The following dietary combines the several articles of the ration which approach most closely in character to the foods commonly employed by natives of the tropics:

* This essay was unanimously awarded the prize of $100, offered by Dr. Louis L. Seaman, late Major and Surgeon First United States Volunteer Engineers, through the Military Service Institution, Governor's Island, N. Y., for the best discussion of the above subject. The judges were Col. John F. Weston, Acting Commissary-General, U. S. Army, Lieut.-Col. Charles Smart, Deputy Surgeon-General, U. S. Army, and Lieut.-Col. William E. Dougherty, Seventh U. S. Infantry. The competition was open to all commissioned officers of the army, navy and volunteer forces.

Articles.	Quantity in ounces.	Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories.
Fresh fish (cod, whole)	18	1.02	—	40.80	6.50	155
Soft bread	18	6.12	269.28	48.45	6.90	1,355
Rice	1.6	.18	35.55	3.50	.36	163
Potatoes and tomatoes	16	.54	65.80	8.17	1.36	297
Dried fruits	2	1.02	33.80	1.18	.19	147
Sugar	2 4	—	64.60	—	—	264
Total	56	8.88	409.03	102.10	15.51	2,321

Total carbon, 241.84 grammes; nitrogen to carbon, 1:16.7.

On consideration of the preceding four dietaries it is seen that the first combination, as compared with the average dietary for individuals of the same weight native to the tropics, presents a great excess in protein, fats and fuel value — even the carbohydrates being largely increased. In the second arrangement the fats are present in five times the quantity apparently sufficient and desirable under tropical standards, the protein is in considerable excess and the fuel value unnecessarily high, while the deficiency in carbohydrates is noticeable. In the third dietary the fats and protein are both in excess, but the quantity of carbohydrates is markedly deficient. The force value of this combination is not far from the actual requirements of the system, in the tropics, as regards energy. In the last arrangement of the articles of the ration the protein is seen to be present in slight excess, while the fats and carbohydrates are markedly deficient, the former especially so. The force value of this dietary, also, is wholly insufficient to meet the needs of even moderate muscular labor. The conclusion is therefore justifiable that while the several articles composing the ration are well selected, the quantities in which their issue is now authorized are so proportioned that their combination in a dietary, approximately similar to the nutrient standard of native laborers in the tropics — even under conditions of equality as regards weight — is theoretically as well as practically impossible. It may, therefore, be accepted that the proportions of the ration as at present existing do not permit the fulfilment of proper dietary requirements under conditions of tropical service.

III. THE RATION FOR TROPICAL SERVICE.

Quantity.— Prolonged heat exerts an unfavorable influence upon the digestive and assimilative functions. Hence work should not be imposed upon the alimentary tract in excess of its powers and the diet should be restricted as compared with that of temperate climates, particularly since both diarrhea and dysentery are known to be favored by the presence of a large amount of undigested food in the intestine, while tropical anemia may be hastened by malassimilation resulting from overtaxation of the digestive powers. The respiration, as has already been shown, is much less energetic after arrival in the tropics, and this, combined with rarefaction of the atmosphere and other factors, results in a much less amount of oxygen being introduced into the blood than is the case in temperate climates. If the reduced quantity of oxygen available finds in the organism an excess of alimentary substances it is evident that oxidation of the latter will be delayed even if ultimately complete, and metabolic equilibrium is thus disturbed. Further, according to Foster,[38] the amount of heat evolved by the internal organs depends largely on their stimulation. In the case of the salivary glands the temperature of the saliva during irritation of the chorda has been found to be 1° to 1.5° higher than that of the blood in the carotid artery at the same time; and the same author states that, in all probability, the investigation of other secreting glandular organs under excitement would yield similar results. Particularly is this true of the liver, an organ in which a large amount of heat is produced, as is shown by the fact that a temperature of 40.73° C. has been observed in the hepatic vein, while that of the right heart was 37.7° C. and that of the inferior vena cava 36.35° C. Hence the excitation of the liver, either through the improper selection of foods or an excess of nutritive material requiring disposal, is to be avoided in hot climates. It is obvious that the consumption of any considerable amount of food for the production of internal heat is here as unnecessary as it is undesirable, while the nutritive needs of the organism require a smaller amount of material to repair the systemic losses resulting from the decreased oxidation and normally less active life of the tropics.

Protein and nitrogen. — The proteid molecule, as shown by Krukenberg,[34] Pavy,[35] Schuetzenberger[36] and others, is not to be considered as a perfect chemic body, but as a complex, composite mixture of a glucosidal nature, containing nitrogenous, carbohydratic and fatty radicles. Protein has been experimentally decomposed into these radicles, outside the body, by the above investigators; and it has been determined by Cohnheim,[37] Seegen,[38] Külz,[39] Mering[40] and others, through artificial conditions of diet, that the same cleavage occurs as a result of the processes of oxidation within the organism. The non-nitrogenous radicles have as their object the production of energy; and when the systemic needs are satisfied as regards nitrogen, it is obvious that, for the tropics, such force-food as may still be required is preferably supplied in the simple proximate forms not requiring such cleavage — with its necessary production of heat — and not yielding, in the process of decomposition, considerable quantities of a substance which is in excess of the immediate requirements of the organism, and, as stated by Foster,[38] can be stored up in but extremely small part, and hence merely requires elimination as an excrementitious body. Particularly is this the case where the need for internal heat is obviously lessened, and where the renal function, from the causes already mentioned, operates at a disadvantage. It is hence extremely important that protein be supplied in the tropics purely for the purpose of systemic repair and not be relied upon for the creation of any considerable proportion of the energy required by the organism. The ingestion of a certain amount of nitrogen is indisputably necessary to health, and with its deficiency the food ceases to be digested and a condition of inanition ensues. This, however, is no argument for its supply in excessive amount; and the nitrogenous intake — for the most satisfactory accomplishment of the metabolic processes — should be directly proportioned to body waste. According to Gayet,[41] the average man at ordinary labor, in the temperate zone, loses 20 grammes of nitrogen daily, nearly all of which is in the urine. Eijkman,[12] in Java, found that the average excretion of nitrogen in a similar class

of Malays was 7.817 grammes; which, being reduced to a common standard of weight at 145 pounds — the Malays averaging 111 pounds — gives 10.21 grammes, or about one-half the quantity ordinarily eliminated in temperate regions. The nitrogen in the standard diets for laboring men in cool climates, proposed as above by Playfair,[18] Moleschott,[24] Atwater[19] and others, varies from 18.35 grammes to 20.29 grammes. Notter and Firth[42] give 11.6 grammes as the daily allowance for a mere subsistence diet in temperate regions and state that even as much as 32 grammes may be required during great exertion. On referring to the table given elsewhere showing the dietaries actually employed by laboring classes in the tropics, reduced to the above standard of weight for purposes of comparison, it is seen that the hard-working native of the low latitudes ingests an average of 12.83 grammes of nitrogen, or an amount only slightly in excess of the requirements for bare subsistence in temperate climates. This deficiency in the amount of nitrogen ingested by the native is, however, apparent rather than real; for the above quantity, small though it may seem, has been shown by experience through untold generations to be not only sufficient for the maintenance of life and health in the tropics, but also ample for the greater demands upon the organism resulting from labor. Maurel,[3] in his study of the natives of Gaudeloupe and Guiana, found that their diet was almost wholly vegetable. From estimates based on official figures, he showed that the inhabitants of Gaudeloupe used a daily average of only 20 grammes of meat per capita, and that only one-seventh of the vegetable food was imported in the form of the cereals of the temperate zone; the remaining six-sevenths being made up of yams, cassava, sweet potatoes, bananas, mangoes and other fruits. Similar customs as regards food are said by Eijkman[12] to prevail among the Javanese Malays; and in India and Abyssinia, Church[28] and Lapicque[30] found that the native rarely used animal material in any form. For natives of the tropics, it may therefore be accepted that the vegetable kingdom is almost wholly the source from which their food is drawn, and that but little of the vegetable material so used is imported in the form of cereals grown in cool climates. These facts are extremely important, for data supplied by the Department of Agriculture[43] show that fruits and vegetables grown in the tropics, at least as far as the western hemisphere is concerned, are much less rich in nitrogenous constituents than are the vegetable foods indigenous to the temperate zone. A comparison of the vegetables most commonly employed as staple foods in the tropics and in cool climates shows the following differences:

VEGETABLE FOODS CHIEFLY USED IN THE TROPICS.

	Water, per cent.	Protein, per cent.	Nitrogen, per cent.	Fat, per cent.	Carbohydrates, per cent.	Crude fibre, per cent.	Ash, per cent.
Cassava	61.30	.64	.102	.17	36.50	.88	.51
Sweet potato (edible portion)	69	1.8	.288	.70	26.10	1.30	1.10
Yam	71.86	1	.160	.20	25.05	1.03	.86
Sugar cane	75.41	1.49	.230	—	15.36	7.01	.69
Ripe bananas (edible portion)	75.3	1.3	.208	.6	21	1	.8
Rice	12.3	9	1.780	.3	76.8	.2	.4

Average amount of nitrogen, per cent., .378.

VEGETABLE FOODS CHIEFLY USED IN TEMPERATE CLIMATES.

	Water, per cent.	Protein, per cent.	Nitrogen, per cent.	Fat, per cent.	Carbohydrates, per cent.	Crude fibre, per cent.	Ash, per cent.
White potato (edible portion)	78.3	2.2	.352	.1	18	.4	1
Wheat flour	12.8	10.8	1.552	1.1	74.6	.2	.5
Oatmeal	7.3	16.1	2.575	7.2	66.6	.9	1.9
Corn meal, granular	12.5	9.2	1.472	1.9	74.4	1	1
Barley flour	11.9	10.5	1.520	2.2	66.3	6.5	2.6
Rye	12.7	7.1	1.135	.9	78.5	—	.8

Average amount of nitrogen, per cent., 1.434.

In these two groups of food stuffs the great inferiority of the vegetable diet of the native in the tropics, as regards available nitrogen, is at once apparent; the vegetable and cereals most commonly used as food in the temperate zone containing, in a given weight, almost exactly four times more nitrogenous material. Hence it is evident that the native diet in the tropics is doubly inferior as regards nitrogen, meat being but little used, while the vegetable foods which replace the cereals of temperate climates contain but a small proportion of this element.

The fact may here be emphasized that nature has laid down certain laws as regards alimentation, which it is the highest wisdom to follow. It is not a matter of theory but an unrecognized chemical instinct which leads the native of the tropics to make his choice of diet and nature's provision of aliment accord so closely. The inhabitants of warm climates, civilized and savage, succeeded in properly adjusting their diet through experience alone long before any theories as to the proper diet for such climates were advanced; and it is worthy of note that not only is a light vegetable diet, containing proportionately little nitrogen, sufficient to maintain health and strength in the native of the tropics, but whites even, who may have been born in hot countries, intuitively adopt a similar regimen and thrive upon it. Habit in the use of certain classes of food stuffs certainly operates against a change of diet; yet Eijkman[12] found, in Java, that the food of resident whites — born in Europe — approached the native dietary, presenting a marked decrease in both protein and fats. Analyses of this modified European diet gave an average of 99.6 grammes of protein, 83.8 grammes of fats and 284.2 grammes of carbohydrates. The fact that an excess of meat in any form, greasy meat especially, soon becomes distasteful in the tropics is certainly a powerful argument for an alteration in diet in favor of a diminution of protein as well as fats.

The most striking effect of a highly nitrogenous diet is the increase in the nitrogenous metabolism of the body, and to a lesser degree of the non-nitrogenous also. This increased metabolism, through the amount of heat necessarily generated in the process, is clearly undesirable in warm climates. Further, the deficient supply of oxygen available in the tropics impairs the combustion of proteids, and under such conditions the overloaded system habitually contains an undue amount of unoxidized nitrogenous matter, which in an oxidized state would be expelled by the kidneys. Albuminates, and nitrogenous compounds generally, undergo change and are excreted principally as urea; therefore an excess of albuminous food throws more work on the kid-

neys, which may induce disease. Nitrogenous matter being in excess and the secretion of the urine by the kidneys being decreased, there may be deposits in the urinary passages in the shape of uric acid, or in other parts as urates, through the lack of sufficient fluid for their solution.

As to the liver, Rochard,[44] Moore,[13] Nielly,[14] Rattray,[8] Jousset,[9] Maurel,[45] Treille[46] and others have observed the directly injurious influence of a too nitrogenous and greasy diet in the production of disorders of this organ. Hepatic disease, while extremely common among the whites of India and other tropical regions, is rare among the native population. The idea has been advanced that the native enjoys an immunity to this affection as a result of acclimation rather than diet; but this theory is contradicted by Maurel,[45] who states that he, with others, has repeatedly seen congestion of the liver occurring in natives of the tropics, who a few months before, by reason of circumstances, had adopted the much more nitrogenous diet of the temperate zone. This view is upheld by a recent medical publication,[47] which calls attention to the greatly increased liability to disease of the liver among Asiatics who have become semi-Europeanized, and connects it with the fact that these individuals crave and use the same bulk of the more concentrated and nitrogenous diet of the European as they do of their own native foods. Further, to show the injurious effect of a nitrogenous diet in hot countries, laboratory experiments are not wanting. Maurel,[45] in Guiana, fed a series of rabbits upon a vegetable diet, while another group was fed entirely on cheese. The investigation extended over a period of ten months and the results were conclusive, showing a less increase in the weight of the first group than occurred in the cheese-fed rabbits. Not only, also, was the total weight of the second series of animals much greater than that of the first, but the disparity in hepatic enlargement was even more marked, the livers of the latter class not only showing disproportionate increase in size but also exhibiting manifest changes — being hard, mottled, and presenting a condition of hypertrophic cirrhosis. In a second series of experiments the results, though positive, were slightly less marked, since the experimental feeding continued for only six instead of ten months, and the influence of a nitrogenous diet was not so pronounced upon the liver. The following results were obtained by him:

DURATION OF EXPERIMENT, 10 MONTHS, JUNE, 1881, TO APRIL, 1882.

	Total Weight.		At end of experiment.	
	Before experiment, grammes.	After experiment, grammes.	Weight of liver, grammes.	Relation of weight of liver to total weight.
Rabbit No. 1, (Vegetable diet) .	650	1,210	37	1:32.70
Rabbit No. 2, (Cheese diet) .	580	1,780	86	1:20.69

For the three rabbits given a vegetable diet the ratio of the weight of the liver to the total body weight was 1 : 36.85 at the time of death, while the ratio for the cheese-fed rabbits in this respect was 1 : 26.52. In view of the clinical experience and experimental results, as noted above, no further argument as to the influence of a too nitrogenous diet in the tropics in provoking liver disease is required.

SECOND EXPERIMENT, DURATION 6 MONTHS, APRIL, 1882 TO OCTOBER, 1882.

Rabbits.	Diet.	Total Weight.		At end of experiment.	
		Before experiment, grammes.	After experiment, grammes.	Weight of liver, grammes.	Relation of weight of liver to total weight.
No. 1 . .	Vegetable	629	1,160	33	1:35.15
No. 2 . .	"	645	1,980	44	1:42.72
No. 3 . .	Cheese	467	1,365	48	1:29.44
No. 4 . .	"	565	1,370	45	1:30.44

From what has been said it is evident that the nitrogenous constituents of the United States Army ration, for troops serving in the tropics, may be safely and advantageously reduced. This is preferably accomplished at the expense of the meat component, which, besides protein, also contains a considerable proportion of fats. A complete fall to the nitrogenous level of the native of the tropics is, however, undesirable, since a single nutrient standard for the military service must always contain within itself the elements necessary in emergency to repair the losses incident to the greatest physical effort of which the human being is capable. For this reason the daily allowance of protein provided for the soldier, unless separate dietetic standards for conditions of peace and war prevail, must necessarily be in considerable excess of the actual needs of the organism under ordinary circumstances. Hence it is probable that the daily allowance of nitrogen cannot be safely reduced below 16 grammes — represented by 100 grammes of protein — even though this amount is in considerable proportionate excess of the nitrogenous normal of the corresponding native class of the tropics.

(To be continued.)

A STUDY OF THE NATURE AND SIGNIFICANCE OF THE SYMPTOMS IN DISORDERS OF THE STOMACH.[1]

BY HENRY F. HEWES, M.D., BOSTON,
Physician to Out-Patients at the Massachusetts General Hospital, Boston; Assistant in Chemistry, Harvard Medical School.

FOR several years I have conducted a systematic investigation of all cases of disorder of the stomach which have come under my care. The investigation has been directed primarily to the study of the secretory function and the chemical phenomena of digestion with a view to determining what rôle variations in this function and in the chemical conditions play in these maladies. The investigation has included a careful study of the symptoms and symptomatologies, and of the relation or association of these factors with the chemical findings in the various cases, and has revealed certain facts in regard to the nature and significance of symptoms in the disorders of the stomach, of importance to the understanding not only of

[1] Read in part at a meeting of the Suffolk District Medical Society, Section for Clinical Medicine, Pathology and Hygiene, January 19, 1900.

these disorders, but also of the nature of symptoms generally.

To obtain the necessary data for this study, there was made in each case a systematic qualitative and quantitative analysis of the gastric contents, a careful investigation of the physical conditions of the stomach, as motility, size, position, the contents of the stomach washings, and a careful study of the symptomatology. By this means it was possible to determine just what the chemical condition was in each case, whether or not it was associated with signs of definite organic disease, as cancer, ulcer, dilatation, stasis, gastritis, or disorders of the organ other than chemical, as hypomotility, and what the associated symptoms of each definite chemical condition were.

The method of investigation employed was the following: A preliminary history of the case was taken at the first visit. The patient was instructed to return the next morning with stomach empty after a twelve to eighteen hours' fast. Upon arrival the tube was passed, to judge of condition of empty stomach. A meal consisting of one slice of bread (weight 60 grammes) and one glass (300 cubic centimetres) of water was then given. A careful history of the patient, made with a reference list of questions, was then taken by a special assistant. This regular list of questions was placed in a book, and followed accurately, so that each case went through the same examination. One hour after the ingestion of the meal the stomach tube was passed and the total contents expressed by expression and suction. The stomach was then washed out to ascertain how much residue remained. It was then inflated with air, and the position and size, the location of the lower, and where possible the upper, border, ascertained by percussion. The expressed contents were measured and a careful qualitative and quantitative analysis of the contents made.[2]

The method of analysis employed was that published by me in the *Boston Medical and Surgical Journal*, January 4, 1900. In each case qualitative tests for free HCl and for lactic acid, and quantitative estimations of the total acidity, the total quantity of HCl, and the total quantity of free HCl were made. In cases where no free HCl was present a qualitative test for combined HCl was made. Finally, when all this data was in, a careful review history of the patient was taken by me, with the purpose of adjusting as accurately as possible the relations of the symptomatologies or of special symptoms with the chemical findings. By this method of a triple history the effect of leading questions was to some extent controlled and a very accurate record of the symptomatology obtained. In most cases where the chemical finding was abnormal a second or even a third examination was made at intervals of a week or a month.

A study of the records of the chemical findings in the cases investigated gives the following results:

Two hundred and fifty cases were investigated. Of these, 120, or 48 per cent., had chemical findings normal in all respects; that is, the contents in these cases contained, according to the standard tests, free HCl and no lactic acid, and in each the total acidity, the total quantity of HCl, and the total quantity of free HCl were all within the limits of the average normal findings. One hundred and thirty, or 52 per cent., of the cases, showed variation from these normal records.

In these 130 cases with abnormal chemical findings the variations present were either qualitative or quantitative. The qualitative variations consisted of (1) the absence of free HCl; (2) the absence of both free and combined HCl; (3) the presence of lactic acid. Of the 130 cases, 33 showed absence of free HCl, 15 showed absence of both free and combined HCl, 11 showed the presence of lactic acid. The quantitative variations consisted of the presence of greater or less quantities of total acid, of total HCl, or of total free HCl, than normal. All of the 130 cases showed some variation from the normal in the quantitative records. Eighty-four showed records of total acid above the normal averages; that is, were cases of hyperacidity. Of these, seven were cases of hyperacidity due to lactic-acid formation, having no free HCl, but large quantities of lactic acid, while 72 were cases of hyperacidity due to excessive secretion of HCl, having records of total HCl above the normal; that is, cases of hyperchlorhydria.[3] Forty-eight of the 130 cases with abnormal findings were cases of hypochlorhydria having records of total free HCl below the normal. Of these, 33 had no free HCl. Fifteen had no free or combined HCl; that is, were cases of achlorhydria.

That is, of 250 cases of disorder of the stomach taken without discrimination in regard to the nature of the disorder and classified solely upon the basis of the chemical findings present, 120, or 48 per cent., were cases with normal chemistry, 84, cases of hyperacidity, 72, cases of hyperchlorhydria, 48, cases of hypochlorhydria, 15, cases of achlorhydria, seven, cases of hyperacidity due to lactic-acid fermentation.

The records which I have used as the standard normal records for this comparative study are those obtained by me in an investigation of the gastric contents of 100 healthy individuals of both sexes in Boston. According to these records, the average limits of variation in the total acidity, total HCl, and total free HCl, of the contents of the normal stomach obtained one hour after the ingestion of an Ewald test meal are as follows:

TABLE OF ACIDITY OF NORMAL CONTENTS; 100 CASES, INCLUDING BOTH SEXES.

	Average Limits of Variation.		Extreme Limits of Variation.	Number above Average Limits.	Number below Average Limits.
	Grammes per mills.	Equivalent in .1 cubic centimetre decinormal soda solution.			
Total acidity. .	1.5 -3	41-83	1.3-3.2	2	3
Total free HCl .	.35-1.5	10-41	.2-1.9	3	2
Total HCl (free and combined) .	1.2 -2.5	33-70	1.1-2.6	1	1

In making up the average limits the highest figure which was obtained in at least four cases was taken as the maximum limit and the lowest reached by four, the minimum. These results differ somewhat from those

[2] This method was strictly adhered to in a majority of cases. In some cases certain steps were necessarily omitted.

[3] It is to be noted that I use the record of total HCl, not the total acidity, as the index of hyperchlorhydria.

obtained under the same conditions in other places, as, for example, those published by Ewald in Berlin, Hemmeter in Baltimore, Einhorn, Mintz, Friedenwald, Leo, the records of Boston averaging higher than those of most other places. Those of Straus from Riegel's clinic are the only records obtained under similar conditions in which the averages approach these of my cases. But inasmuch as they are the records of normal conditions for this region, and were obtained by the same method and same observer as the pathological records here given, they form a more useful standard for comparison for these cases under investigation than the records of Berlin or Baltimore or those given in the various text-books.

Of these 250 cases which we have classified according to the chemical findings, 32 of the cases of hyperacidity, including all seven cases of lactic-acid hyperacidity, 25 of the cases of hyperchlorhydria, 23 of the cases of hypochlorhydria, including five cases of achlorhydria, and 30 of the cases with normal acidity, showed evidence of the existence of diseased conditions other than those of abnormality in the secretion or the chemistry of digestion; that is, 85 of the 250 cases were cases with some organic lesion of the stomach, as cancer or ulcer, dilatation, stenosis, or ptosis with stasis of contents, or gastritis of a type marked enough to give definite symptoms of inflammation or irritation. The remaining 165 cases, consisting of 47 cases of hyperchlorhydria, 90 cases of normal acidity, and 28 cases of hypochlorhydria, were cases in which the chemical abnormalities or conditions clearly associated with or secondary to these were the only objective lesions which could be determined; that is, they showed either chemical abnormalities or no evidences of disorder other than the symptoms.[4]

These are the records of the objective signs or characters of the cases of disorder of the stomach included in this investigation, which it was possible to obtain by the methods of investigation employed. As already stated, a record of the subjective signs or symptoms of disorder was also made in all the cases. We have, therefore, through the possession of these objective and subjective records in all our cases, an opportunity to study upon an extensive scale the subject of the association of objective and subjective phenomena in disorders of the stomach, to determine by a scientific method of observation certain important elements in the relation of symptoms to the underlying associated physical or chemical conditions present, and thus to gain much definite knowledge in regard to the significance of symptoms in these disorders and perhaps also some indications of the nature of subjective symptoms generally.

In this investigation of the relationship of the symptoms and objective conditions in these disorders of the stomach I have selected for my preliminary study the 165 cases in which the abnormality in the chemical finding was the sole objective abnormality discoverable, since it is possible to gain much more accurate determinations in regard to the causes and significance of symptoms in these conditions where there is but one variable in the objective conditions, a variation in the acidity of the stomach, than in the more complex cases of organic disease. It is my purpose to first gain as much knowledge as possible in regard to the association and significance of the symptoms in these simple cases, and then to test the general application of these results and of the conclusions drawn from them by subjecting them to the testimony of all the cases. The cases included in this preliminary study, then, include 47 cases of hyperchlorhydria, 28 cases of hypochlorhydria and 90 cases with normal acidity. For greater simplicity in nomenclature I shall speak of these three sets as cases of hyperacidity, cases of hypoacidity and cases of normal acidity.

If for the purpose of this comparative study we review the symptomatologies of the cases in each of our three sets, we shall at once note the fact that there is great variation in the symptomatologies among the cases included in a single set. Thus of our 47 cases of uncomplicated hyperacidity (hyperchlorhydria) four have the single symptom distress as the whole symptomatology. Twenty have the symptomatology of distress and eructation of gas or desire to raise gas as the total symptomatology. In two of the above cases the distress is described as pain, in two as nausea, in seven as a burning sensation, in five as a sense of weight or fulness or the sense of a lump in the stomach, in three as an empty feeling, in five as a dull distress. In 10 of these cases the distress occurs from two minutes to three-fourths of an hour after the ingestion of food; four of these describe the distress as pain or burning, six simply as distress. In 14 of these cases the distress occurs from one to three hours after food. In five of these the distress is pain or burning. In 19 cases the symptomatology consists of distress, heartburn, pyrosis. In seven of these latter the symptoms occur within a half hour after food, in 12 later than one hour after food. All of these show relief of symptoms by soda. Ten of the latter 12 show relief of symptoms by ingestion of an egg or bread. Five cases show distress, heartburn, pyrosis, vomiting; marked relief by soda.

That is, in 47 cases with the same chemical abnormality we have the following separate symptomatologies: Distress, nausea or pain, or burning; distress plus eructations of gas or desire to raise gas occurring soon after ingestion of food; distress plus gas occurring more than an hour after ingestion of food; distress, heartburn, pyrosis, occurring soon after food; distress, heartburn, pyrosis, occurring long after ingestion of food; distress, heartburn, pyrosis, vomiting; acute pain, heartburn, pyrosis, occurring soon; acute pain, heartburn, pyrosis, occurring late, and so on.

Of the 28 cases of hypoacidity (hypochlorhydria), five have distress as the whole symtomatology; 14 have distress and eructations of gas. In three the distress is described as pain; in ten, as nausea; in six, as an empty sense; in nine, as fulness or weight, or a lump. In 15 the distress comes from two minutes to one-half hour after food; in 13, from one to three hours. In six cases the symptomatology is distress, eructations of gas, water brash or regurgitation of food. In three cases there were distress, gas and vomiting. About one-third of the cases showed relief of symptoms by soda; few by food. In our hypoacidity cases we had, then: Distress; distress with gas coming soon; distress with gas coming late; distress, gas and water brash; pain, gas and vomiting.

Of the 90 cases with normal acidity, 17 had distress as the only symptom; 41 had distress with de-

[4] Of course it was impossible to eliminate the existence of organic disorder in these cases other than chemical absolutely. Some of the cases doubtless had conditions of hypomotility not discoverable by our tests; some may have had ulcer or cancer with the signs masked, but the elimination was as careful as possible.

sire to raise gas or eructations of gas; 15 had distress, heartburn, pyrosis; 11 had distress, gas, regurgitation or water brash; six had distress, gas, vomiting. The time of the appearance of symptoms and the character of the distress varied as in the cases of hyper- and hypo-acidity.

This comparative study of chemical findings and symptoms thus demonstrates to us at the start one fact of importance, which is that there is no uniformity in the symptomatologies associated with definite conditions of acidity, the cases included in each set of cases showing several varieties of symptomatology.

If, now, we study the symptomatologies of our cases of all three sets together, we find that among the varieties of symptomatologies in each set there are certain symptomatologies common to a considerable number of cases of all three sets; that is, that many cases of hyperacidity have symptomatologies similar to those found in many cases of hypoacidity or in many cases of normal acidity. Thus of our cases of hyperacidity, the symptoms distress (of some kind) and desire to raise gas or eructations of gas, make up the whole symptomatology in 20 of the cases. In eight cases the distress appears from five minutes to one-half hour after food; in 12 from one to three hours. Distress alone makes up the symptomatology in four cases. Of the hypoacidity cases, the same symptomatology, distress and desire to raise gas or eructations of gas, characterizes 14 of the cases. In six cases the distress is from five to thirty minutes after food; in eight from one to three hours. In five cases distress is the only symptom. Of the cases with normal acidity, 41 had this symptomatology of distress with desire to raise gas or eructations of gas; 17 had distress as the single symptom. That is, 20, or 42 per cent., of the cases of hyperacidity, 14, or 50 per cent., of the cases of hypoacidity, and 41, or 45 per cent., of the cases of normal acidity, making 45 per cent., or nearly one-half, of all the cases included, had the same symptomatology. And an even larger number of cases in each set could be found with symptomatologies similar to those in the other two. This is the second fact of importance to be gathered from these observations.

The third fact that we note in a study of the cases is that this symptomatology of distress, which forms the sole symptomatology of some cases of all these types, forms a part of the symptomatology of all the cases. And the common symptomatology of distress plus desire to raise gas or eructations of gas, which forms the sole symptomatology in so many of our cases belonging to each of the three types, is present in a large majority, 80 per cent., of all our cases. That is, one symptom or a certain definite group of symptoms forms a common groundwork of the symptomatologies in all cases. In 45 per cent. of our cases this common groundwork is the whole symptomatology. In the remaining cases it forms a base to which certain special symptoms, as heartburn, pyrosis or vomiting, are added.

To sum up, the facts which this study of the association of subjective and objective signs, in cases in which the objective abnormality present is limited to chemical abnormalities, give us, are:

Observation I. One symptom, distress, was present in practically all cases.

Observation II. One definite symptomatology, distress plus desire to raise gas or eructations of gas, was present in 80 per cent. of all cases.

Observation III. This symptomatology formed the whole symptomatology of nearly one-half (45 per cent.) of all the cases, including 42 per cent. of the cases of hyperacidity, 45 per cent. of those of normal acidity, and 50 per cent. of those of hypoacidity.

Observation IV. The symptomatologies present in the cases of a single chemical type showed great variation. Thus of the cases of hyperacidity, 42 per cent. showed simply the symptomatology common to a large number of cases of all types, distress plus gas, while 49 per cent. showed these symptoms combined with symptoms as heartburn or pyrosis, special symptoms more or less peculiar to this class of cases.

If, now, we investigate our second division of cases, the 85 cases in which the objective signs or history showed evidence of abnormalities other than those of a chemical nature, in regard to the application of these facts, we find that this application is as true in these cases as it is in the simpler cases, included in our first study. Distress is a symptom in all but three of these cases;[5] distress plus gas was present as part of the symptomatology of a large number. The chief variation between the symptomatologies of these cases and those of the first set consisted in the fact that the symptomatology was as a rule more complex, special symptoms of greater variety in type being present in a larger per cent. of cases.

The bearing of these facts which have been disclosed through these observations upon our understanding of the nature and significance of the symptoms in the disorders of the stomach is, it seems to me, very direct. Among these facts the most striking and important in this regard is that there are certain common symptoms, which are present as the whole or a part of the symptomatology in practically all cases, including cases with the most diverse and opposite objective findings.

This fact brings us to one very definite and fundamental conclusion in regard to the symptoms of disorder of the stomach; namely, that all causes affecting the stomach of whatever nature will produce as a part of the symptomatology of the affection which they bring about, certain common symptoms, which are therefore manifestations of the nature or habit of the stomach when disturbed, rather than manifestations of special reactions to special causes of disturbance. In the light of this, and of the several other facts which our investigations have disclosed to us, the general explanation of the symptoms and symptomatologies which occur in the various disorders of the stomach would appear to be the following: When the stomach is influenced by any untoward agency the normal accomplishment of its function is impeded or disturbed, and in performing this function under these adverse conditions it gives certain definite manifestations of this extra labor or of this disturbance of function. These particular manifestations are simply the habitual or natural reactions of the organ working under untoward conditions, or the subjective symptoms which result from such reactions, and are thus independent of the special cause of the impairment of function, occurring wherever there is impairment from any cause whatsoever. They are, as our observations have demon-

[5] These three exceptions were cases in which no subjective symptoms pointing to disorder of the stomach were present. In two of them lack of appetite and progressive loss of flesh and strength were the only symptoms complained of. Both proved to be cases of carcinoma of the stomach. In one the tumor could be felt. In the other the diagnosis was proven by autopsy. The secretion was normal in both these cases.

strated, distress and restlessness or increased peristalsis. The distress may be pain or nausea, or a burning sensation or a sense of weight or fulness. The restlessness or peristalsis may give rise to eructations of gas. Both the distress and the restlessness may incite the individual to attempts to raise gas for relief. So that, as a result of impairment of function, not perfectly compensated, the symptom distress or the symptomatology of distress plus a desire to raise gas or actual eructations of gas, the symptomatologies present in all our cases, arise in any stomach (Observations I and III). And thus any affection of the stomach, that is, any condition in which an untoward agency has influenced the stomach sufficiently to impede the performance of its function, to make its labor in performance greater than its normal output of energy will accomplish, will be attended with this symptom distress or the symptomatology distress plus desire to raise gas or eructations of gas.

Many affections of the stomach of various causes will have this symptom or group of symptoms as their whole symptomatology (Observation III). If the affection of function is severe these symptoms will be marked and additional gastric phenomena and symptoms may be superimposed, as, for example, vomiting (Observation IV). When special causes are present we may have special symptoms produced by the peculiar action of this cause upon the stomach or the system, added to the general symptoms (Observation IV).

Thus an irritant cause, as an excess of acid, may produce symptoms peculiar to itself, as heartburn or pyrosis. Whether such a cause capable of producing special symptoms produces merely the general symptoms of disorder of function, or these plus its special symptoms, depends upon the strength or severity of the causal agent or the susceptibility of the stomach to this agent in a given case.

The derivation of these explanations from our observations and the application of them to the special cases included in these observations can be clearly traced. In regard to these cases it will be noted that a certain number had present a possible, even a probable, cause for symptoms in the form of an external irritant or source of irritation. Thus the hyperacidity cases had an excess of acid, a condition which, as is well known, and as I myself have proved by special experiments, proves itself sufficient to cause symptoms of a very definite and distinctive character in some cases. The remainder of the cases, including many of the cases of normal acidity, and probably a majority of the cases of hypochlorhydria, had no visible evidence of irritation. There was in some of them hypomotility, in some the position of the stomach was lower than the normal, in some no signs of any abnormality save the symptomatic signs of incapacity to perform the function without discomfort.

In the cases in which the presence of some special irritant was indicated by our methods of analyses, as, for example, the cases of hyperacidity, there was marked lack of uniformity in the symptoms. Some, 42 per cent., of the cases had merely the general symptoms of disorder of function. Others, 49 per cent., had these plus special symptoms, as heartburn, pyrosis, vomiting. In the second set, owing to the strength of the acid or the susceptibility or idiosyncrasy of the patient, the affection resulted in the manifestations of the special irritant action of acid upon the membrane of the stomach, as burning or pain, and raising of the acid contents of the stomach into the esophagus and mouth, where these same subjective symptoms of irritation were produced; or the disturbance of the stomach was so great that vomiting was produced. In the first set the strength of the acid was so small, or the susceptibility of the patient to this form of irritation so slight, or the habit of the stomach was such, that no raising of acid to the esophagus and no vomiting occurred, and thus we had simply the regular symptoms of distress or distress plus gas, which in these cases have arisen from the disorder of function by the hyperacid contents.[6] Perhaps the cases in which the distress is described as a burning sensation or distinct pain are those in which this special irritant action is prominent.[7] Doubtless the symptoms of cases where ulcer or cancer is the special cause are to be explained along the same general lines of special action of the lesion.

It is interesting to note in these cases in which we have evidences of the presence of an irritant, how great a rôle individual susceptibility or idiosyncrasy plays in the symptomatology of disorders of the stomach. If we examine our cases of chemical hyperacidity, for instance, we shall note that the severity of the symptoms, or the presence or absence of the special symptoms of acidity, are not proportionate to the records of the acidity in the various cases. Cases with very high totals, as a rule, have severe symptoms, giving evidence of the nature as well as of the presence of the irritant. But some of these have very mild symptoms, while cases with but moderately high records frequently have symptoms much more severe and typical of acid irritation than many cases of far higher totals. The inference which we draw from this is that it is not the amount of the irritant alone, but also the susceptibility of the individual to this particular irritant, which regulates the severity and the character of the symptoms. The symptoms in a given case are a compromise between these two factors. This is true, whether the cause be an acid irritant, an obstruction to motion, or an impulse from the nerve centres.

The cause of a clinical hyperacidity may as well be a hyperesthesia as an excess of acid. A number of my cases with normal acidity had symptoms suggestive of acid irritation, much more marked than those of many cases with chemical hyperacidity. That is, these individuals had an amount of acid well within the normal, an amount borne by the average individual without symptoms, which in them caused symptoms. Practically, they were suffering from the presence of greater quantities of acid in their stomachs than they could bear. We can call these cases cases of hyperacidity or hyperesthesia, according to whether we use a chemical or a clinical basis for our classification.

In the second division of our cases, those in which there was no evidence to chemical or physical tests of the presence of any external or objective source of irritation or cause of impairment of function other

[6] Of course I do not mean to imply here that the disorder of function which is associated with hyperacidity is due to the irritant action of the acid alone. It is due also in all probability in some cases to untoward influences of th acid upon the chemical process of peptic digestion or upon the digestion of starches, which is inhibited at an earlier stage than normal by the acidity.

[7] That an increased amount of acid in the stomach may irritate the stomach is proven by the fact that certain of the symptoms in such cases at once disappear when the acidity is lessened or neutralized by the ingestion of alkalies, while not affected by ingestion of neutral substances, as bismuth or other drugs.

than one coming through the nervous system or inherent in the constitution of the stomach or individual in a particular case, — that is, the cases with normal acidity and no evidences of organic disease, as cancer, ulcer, gastritis, dilatation, or of hypomotility of a degree sufficient for demonstration by marked stasis of contents, — we have the symptoms which are present in any condition of disorder of function, and which are simply the manifestation of this condition, the distress and desire to raise gas, or actual eructation. The fact that we find these purely symptomatic cases of disorder of the stomach, in which no evidence of organic lesion or secretory disturbance can be determined, these so-called functional conditions, nervous dyspepsias, neurasthenias, or hyperesthesias of the stomach, has always been suggestive evidence to us of the fact which we have proven by these observations, that certain of the symptoms of stomach affections were manifestations either of hyperesthesia or of the stomach performing its functions under untoward conditions, and not necessarily results of irritation, or inflammation or organic lesion.

The results of this investigation have been :

(1) To show that there are certain symptoms — those which as a rule make up the whole symptomatology of cases where no objective cause of the disorder of function can be determined — which are common to all affections of the stomach, whatever the cause, and that they frequently form the whole symptomatology of cases with distinctly opposite causes, as in cases of hyperacidity and hypoacidity (this latter fact showing that the symptomatologies are a habit of the stomach, not a special reaction to a special causal agent).

(2) To show what the symptoms are which are the manifestation of this habit.

(3) To suggest an explanation of the nature of the habit.

The explanation of the exact nature of this symptom habit of the stomach is a matter of hypotheses. It may be considered as a manifestation of the condition of hyperesthesia ; that is, we may conjecture that in all cases where we have symptoms of stomach disorder without signs of a definite cause we have a hyperesthesia of the stomach — a stomach or an individual from nervous conditions so hyperesthetic that the presence of food or the normal action of the organ causes distress. Such a hypothesis would explain our functional cases. The habit may on the other hand be considered as the manifestation of the organ working to perform its function under untoward conditions. This is the hypothesis which I have adopted in my explanations of the symptomatology so far given.

Hyperesthesia of the stomach would explain our functional cases to some extent. And that it may play a part in the symptomatology of the cases with some discoverable cause present, our analysis of the cases of chemical and clinical hyperacidity have indicated. But it does not explain satisfactorily many of our functional cases or the hypoacidity cases. In these there is no evidence of the presence of an irritant. The food may be considered as such in some cases where the symptoms appear soon after ingestion. But the distress and restlessness occur two or three hours after the ingestion of food. The explanation that the normal acidity, which reaches its maximum at one hour or so after food, is a cause in these cases of late distress, the hyperesthetic stomach being sensitive to even moderate, normal amounts of acid, may be urged to account for some of these cases, but it cannot account for those with hypoacidity and anacidity which have these symptoms. There can be no irritant in these cases one hour after food, unless we consider that the weight of undigested food is greater here than the normal, and thus acts as a foreign body. But we have no evidence of hypomotility sufficient to act thus in some of these cases, and in general symptoms coming late after food and the character of the symptoms in many of our cases are not at all suggestive of hyperesthesia. That it is an element in the symptomatology of many cases, there can be little doubt. But the constant condition which it is reasonable to suppose is present in all cases with symptoms is some impairment of normal function which necessitates a greater output of power by the stomach for the accomplishment of this function. The presence of irritants, the diminution in digestive secretions, lack of nervous tone, psychical causes, reflexes, might all cause this. In many cases of gastric disease, we get evidence, other than symptomatic, of this disorder of function, finding hypomotility, stasis of contents. In many, however, we can get no physical evidence, the function being performed; presumably according to our hypothesis, by the extra labor the output of which causes the symptoms.

In support of the hypothesis that the performance of its function by an organ in the presence of untoward conditions may give rise to symptoms, we have several examples.

Thus, the performance of function by the hypermetropic eye causes pain. The use of a muscle in a condition of fatigue causes pain and often tremor of the muscle or the part moved by the muscle. Individuals with hypertrophied or dilated hearts frequently suffer from distress or irregularity of action. The occasional spells of distress associated with irregularity of action which are seen in such cases may quite reasonably be considered as manifestations of the fact that the heart is performing its function at the time with considerable difficulty, some additional untoward condition besides the constant lesion to meet the effects of which the heart has hypertrophied, having intervened. And so the stomach in disorder may have distress and restlessness as manifestations of the fact that it is performing its function under difficulties, giving rise to the symptom which is the common witness of this fact in the case of most organs, distress, or to the group of symptoms of distress associated with restlessness.

I wish to state that I am much indebted to Dr. Morton Prince, of Boston, for the definite conception of this hypothesis in regard to the symptomatology of organs working under conditions of impaired function which I have here applied to the explanation of the symptomatology of the disorders of the stomach.

I have considered these investigations in this paper solely in regard to the light which they throw upon the general nature of symptoms in the disorders of the stomach. The bearing of the results upon questions of diagnosis in disorders of the stomach is self-evident.

It is clearly understood by all investigators of the stomach and its diseases that great care must be observed in drawing conclusions from the findings of single or even several analyses of the gastric contents in

particular cases. The variation in the findings of different periods in a normal individual is often marked. The abnormal condition from which the patient suffers may not be present upon the day of examination, or it may be prominent only in the afternoon, while the contents are obtained in the morning. A finding of a normal acidity upon the day of the examination does not, therefore, necessarily prove that the patient has not a hyperacidity present at the time when symptoms are marked. The knowledge of such facts makes us very slow to argue from negative findings in particular cases. But it does not prevent us from accepting the indications in cases of positive abnormal findings. And, what is of special importance, these facts in no way invalidate the conclusions which we have drawn from the special study outlined in this paper.

The facts upon which we have built our conclusions and hypotheses are, first, that certain common symptoms are present as a groundwork or part of the symptomatologies of practically all cases of gastric disorder of various causes, and, second, that the same group of symptoms forms the symptomatology of many cases of opposite chemical findings. Neither of these facts or conclusions is invalidated by the assumption that in several of our cases the chemical finding recorded was not that present at the time or as a cause of the symptoms complained of. For it is not reasonable to assume that all our cases examined belonged to one type only, or that all our cases of hyperacidity and hypoacidity with similar symptoms were in reality all cases of hyperacidity. And unless we adopt some such conclusion we must accept the facts as valid for the deduction of general conclusions, such as we have deduced.

It may be suggested that in this work I have assumed that where I found an abnormal chemical condition as the sole discoverable abnormal condition in a case, this was the cause of the symptoms or the disturbance in that case. I have not intended to make any such absolute assumption, and such an assumption is not neccessary to support our conclusions. Such a finding is suggestive in this regard and gives us definite ground to go upon in our treatment. It is doubtless the cause of symptoms in some cases in which it occurs, but not necessarily in all. Some of the cases with hyperacidity and some of those with hypoacidity which had similar symptoms may in both sets have been suffering from a similar cause not connected with the secretions. Whether the apparent abnormality was the real cause of the disturbance in each case or not, one cause for symptoms was present in and common to all cases, a disturbance of function, and one symptom or set of symptoms was common to all cases, and these we have connected as cause and effect.

A CASE OF PERNICIOUS VOMITING OF PREGNANCY.[1]

BY E. L. TWOMBLY, M.D., BOSTON,
Gynecologist to St. Elizabeth's Hospital and Boston Dispensary.

THE patient was a young married woman of thirty, residing in one of our pleasant suburban towns. She was quite tall, with a stout figure, and had always been healthy and well. No disturbance at the monthly periods, which had been regular; no kidney trouble. First pregnancy began about September 15, 1897, and vomiting commenced about the end of October (after skipping one period) and continued until her death. She had been confined to her bed from November 1st, and had not been able to retain any food.

I was sent for on December 30, 1897. She was then three and one-half months along, and had been vomiting eight weeks. During this time she had been treated by two other physicians without relief, and the last attendant "did not seem to be alarmed at her condition until, perhaps, two or three days at the last, during which time she was partially unconscious," when he had told the family that there was no hope for her. Realizing that it was a desperate case, and that immediate action might be necessary, I asked Dr. Kingman to go out in consultation with me. On arrival at 9 A. M., we found the patient nearly moribund, without power of speech, and she simply turned and looked at us without any sign that we were as strangers to her. Rectal temperature was 96°, pulse 150. Subcutaneous injections of strychnia, applications of heat, and solutions by the rectum revived her a little, and then a vaginal examination was made showing the pregnant uterus crowded down in the pelvis with sharp anteflexion of the cervix. The cervix was dilated and the pressure somewhat relieved by packing. Within one hour she began to swallow small quantities of liquids without vomiting, and the temperature rose to 98° and pulse came down to 100. After hard work over her all the morning she seemed more comfortable at 2 P. M., but did not become fully conscious, and at 10 P. M. collapsed again, and in spite of prompt treatment applied by Dr. Dennett, whom I had asked to help me, died in about one hour. I find in my note-book this comment: "Treatment too late to be effective."

On reviewing this sad case, it seemed to both Dr. Kingman and myself that the doctor who had taken care of her had trusted too much that the vomiting would some time stop of itself, and, from our point of view, he had neglected to take even the ordinary helpful measures. We felt that if there had been given us a week, or possibly even three or four days, the result might have been different, for we had a healthy woman with a good physique to work upon, although she was much emaciated.

The two points which I wish to bring to your notice by this case, and which I hope may be thoroughly and widely discussed, are these:

(1) That displacements and faulty positions of the pregnant uterus which delay its rising out of the pelvic cavity and press upon the neck of the cervix are more often the causes of excessive vomiting than has been generally supposed. This takes for granted that the irritant is the local one, and that we exclude vomiting originating from other conditions than those connected with a pregnant uterus (chronic gastritis, cancer of stomach, tubercle of brain, fatty degeneration of liver, icterus, etc.). Many cases might be cited where these displacements were rectified with the immediate betterment of the patient. Sometimes the cervix is so rigid, indurated, thickened, or compressed by the fundus doubled on it, that dilatation is necessary to relieve the tissues of the cervix (especially at the internal os) from compression. Not only must the body of the uterus be brought into a favorable position but it must be kept there. When allowed to return

[1] Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, January 24, 1900.

to its faulty position, the vomiting recurs. Physicians often examine and find the uterus in the anterior position, either anteverted or anteflexed, and they consider that position practically normal, and let it alone. Graily Hewitt calls particular attention to this condition, where the fundus is behind the pubic arch and can be so held by it that it is delayed in rising from the pelvis and prevents symmetrical growth, and is also causing a constant pressure on the nerves of the cervix, compressing it in anteflexion. He says: "The cause of the sickness is, in the majority of cases, practically the same, namely, compression of nerves in the cervical tissue, associated with a bent, indurated condition of this part of the uterus, and the consequent loss of the natural pliability and expansibility of the tissues." Elevating the fundus and keeping it so produced a cure in 10 cases out of 12. In the two unfavorable cases, one died — uterus was allowed to return to faulty position, and patient lived at a distance and was very ill before she could be treated; in the second one abortion occurred. The retrodisplacements are more commonly recognized, and replacement or partial replacement by packing is followed by immediate improvement. Hewitt quotes 19 cases, with success in 13, where reduction was effected and maintained. If replacement alone is not effective then dilatation of the cervix should also be tried, which incidentally draws the cervix forward and down, and lessens its cramped condition.

(2) That if all these measures fail in the early months of pregnancy, we should not trust to nature and time to effect a cure, but should proceed to empty the uterus by surgical means, as soon as a consultation has been carefully held, provided the religious beliefs of all concerned are not against such a step. When the patient cannot retain sufficient food to nourish her, either by mouth or rectum, when rest in the horizontal position, when rectifying the displacements of the uterus so far as possible, and the dilatation of the cervix, have been faithfully tried without relief, these measures should not be persisted in while the patient is rapidly losing flesh and strength and getting into the condition where nothing will avail. If we put off the evil day, knowing that there is a risk even in operating early, hoping that, after the third month when the uterus rises out of the pelvis, vomiting will cease, we increase the chances of a fatal result.

Our text-books teach delay. Klein says: "In hyperemesis of the third degree the artificial induction of labor is *occasionally* required." Bacon[2] says: "Induction of abortion is *never* indicated." Leclerc states: "Good results . . . by simple cauterization of cervix; this measure is *far superior* to artificial abortion." Lush says that uncontrollable vomiting is a *rare event*, but when it occurs "there remains as an *ultimate* resource the artificial induction of abortion." A. F. Currier, New York, says in review: "Finally there remains the emptying of the uterus as a last resort, *and only as a last resort*. It should only be done after careful deliberation and with the approval of skilled counsel." Edward Reynolds justly remarks that the solution of the question depends in "a certain degree upon the religious beliefs of the individual family, and upon their estimate of the relative value of maternal and fetal life. Among Protestant physicians in Protestant families it is generally considered the best practice to advocate abortion when all other treatment has failed, but patients are constantly lost by over-conservatism in the most skilled and experienced hands." Gardner[3] says: "As regards the ultimate procedure of emptying the uterus, the general tendency is to delay too long the operation, one which in itself is not without danger." Jewett[4] states: "Evacuation of the uterus is often too long delayed."

Delay and its dangers are emphasized by these last three men. Delay and its dangers are what I am emphasizing to you, and I enter my plea for earlier interference, before the patient's courage is gone, her vitality exhausted, and her system in the worst condition to withstand the shock.

Indications for emptying the uterus. — (1) Inability of retaining any food taken by the mouth; (2) intolerance of rectal enemata; (3) more or less albuminuria; (4) progressive emaciation; (5) headache constant; (6) frequent and feeble pulse; (7) a certain apathy of the patient.

[2] American Journal of Medical Sciences, 1898.

[3] British Medical Journal, 1897.

[4] Canadian Practitioner, September 18, 1897.

BICORNATE UTERUS, WITH TWIN PREGNANCY; ABORTION FROM ONE HORN.[1]

BY CHARLES H. WINN, M.D., BOSTON.

In presenting the following case, it is with no intention of using it as an introduction for a paper upon any of the subjects which it naturally suggests, nor do I care to speak dogmatically concerning even this particular case. It has, however, seemed to me a case of sufficient interest, by reason of the unusual and instructive elements which it presents, to be worth placing upon record.

Mrs. S. E. W., thirty years of age, was a healthy woman of New England birth and parentage, with sufficient intelligence to know better. After having one child at full term nine years previous to the experiences about to be related, she soon became adept in the art of inducing abortions, admitting three prior to 1897, she being each time from two to three months pregnant. On one occasion there was a twin pregnancy, one fetus coming away partially decomposed, the other in normal condition. This incident becomes exceedingly important in the light of subsequent events. She was first seen by me in April, 1897, when she admitted another operative abortion. Intra-uterine douches were used and recovery was complete in two weeks' time.

I next saw her November 8, 1898, when she gave the following history: Her last menstruation was September 17th, and supposing herself pregnant she had inserted a catheter into the uterus one week previous to my visit. Flowing had begun the next day and had continued, with the accompaniment of more or less pain and the occasional expulsion of clots. There had also been moderate gastric disturbance. The os was dilated to size of a quarter dollar. There was moderate flowing and offensive odor. Abdomen tympanitic and slightly tender. Temperature 100°, pulse 92. I removed several vaginal clots and gave a hot intra-uterine douche of lysol. Next day she was quite comfortable, her temperature being normal, pulse 88;

[1] Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, January 24, 1900.

flowing slight and no odor; intra-uterine douche morning and night; stimulants and quinine.

November 10th, next day, several clots passed; odor offensive. Temperature 100°, pulse 96. Headache and slight gastric disturbance. Intra-uterine douches continued.

November 11th, general condition being the same, she was etherized and, assisted by Dr. W. F. Temple, I dilated the cervix and thoroughly curetted the uterus, removing much débris which was rankly offensive; one piece of tissue was nearly as large as a walnut. After douching with lysol, the uterus was packed with iodoform gauze. After this, all pelvic symptoms quieted down and the temperature remained normal, but severe and persistent vomiting proved intractable. There were occasional remissions, when light nourishment would be retained, but these were brief.

One month after curetting, I find by my notes that nothing whatever could be retained, and even the smell of food would cause vomiting. For two weeks it had been noticed that the stomach disturbance was more marked in the morning. Rectal feeding was now begun, and used exclusively for four days. Gastric symptoms gradually abated, and by January 1, 1899, was able to take some solid food. General condition is improving. She still vomits occasionally, at least one meal being lost every day. Temperature continues normal. Menstruation has not appeared and patient is growing anxious.

January 12th. Called Dr. Kingman in consultation and he kindly supplies me with the following notes of his examination: "The cervix is softened almost one-half its length. The uterus is much enlarged and softened, and presents an irregular contour. At the right there is a softly elastic, globular mass, being apparently a pregnancy of about four months' development. Continuous with this at the left and slightly behind is a smaller and firmer mass, about the size of a small fist."

In view of the history, Dr. Kingman stated as his belief that there had been a twin pregnancy in a bicornate uterus, abortion having occurred from the left horn, while the fetus in the right horn had remained undisturbed.

From this time on, gastric symptoms gradually subsided and ceased entirely about April 1st. On July 12th, after eight hours of labor, she was delivered of a healthy nine-pound female child, forceps being required. The placenta was normal. She made an uninterrupted recovery, and mother and child are to-day in good health.

The salient points of the case to which I would call attention are as follows:

(1) The abortion with twins some years ago, in which one fetus was macerated and the other not. In the light of our present knowledge it seems very likely that each horn of the bicornate uterus contained an embryo. Violence being done to one, it underwent changes due to its death and maceration and then both were expelled together.

(2) A second twin pregnancy, both horns being occupied. The abortion in November was complete, as shown by the foul, decomposing tissue removed by a vigorous curetting, and the immediate relief of the septic conditions which resulted.

(3) The demonstration of the bicornate condition, by the facts just mentioned, and by the finding of the contracted horn on the left side of the pregnant uterus in the course of Dr. Kingman's examination in January. Dr. Kingman assures me that the mass described did not suggest the presence of a fibroid tumor, and the preceding and subsequent history contains no indication of such disease.

(4) The probability of superfetation. The last menstruation occurring September 17th, and the child being born July 12th, nearly ten months later, impregnation must have occurred nearly a month later than the menstruation. But abortion in the first week of November must have been of more than a month's development, as proved by the large piece of tissue removed by the curette. It seems, therefore, highly probable that pregnancy occurred in the left horn of the uterus shortly after the cessation of menstruation in September, that a few weeks later, about October 12th, pregnancy occurred in the right horn; that when abortion was attempted, the catheter passed more readily into that horn which contained the larger and more advanced ovum; that this horn emptied itself or was emptied by the curette without any disturbance to the contents of the right horn.

(5) The tolerance of the pregnant uterus to adverse influences is markedly shown by the persistence of pregnancy in spite of catheters, abortion, sepsis, curetting, intra-uterine douches and iodoform-gauze intra-uterine packing.

Incidentally it may be edifying to contemplate the predicament of the physician who attends a woman during an abortion, curettes her uterus, assures her that her uterus is empty and is prepared to take his oath that he has left nothing in it, and who is then brought suddenly face to face with the fact, not only that she is still pregnant, but that the very vomiting which followed the ether of his operation was actually the so-called vomiting of pregnancy.

A CASE OF PERNICIOUS VOMITING OF PREGNANCY.[1]

BY H. S. KNIGHT, M.D., WORCESTER, MASS.

THERE are two elements about this case which are very personal to me: (1) the confession of my failure, and (2) the obligation I feel under to Dr. Kingman for correcting the difficulty which existed and restoring my patient from a condition of extreme emaciation, where it seemed as if death was near, to a condition which promises the very best result.

This patient was a primipara, twenty-seven years old, who menstruated the last time September 20th. On October 27th or 28th I was consulted at my office in reference to the vomiting she complained of. The patient was carried along without very great complaint until November 13th, when the vomiting was so excessive and her rejection of almost all forms of food was so constant, that rather more urgency was expressed on the part of the patient and the friends that something be done, and of course I reported to the house at very short intervals. The usual treatment by the stomach which you all are familiar with, and probably have tried with more or less success in various cases, was that which was adopted by me. Suffice it to say that while it gave a certain amount of relief the result was not permanent, and on December 7th I was asked to renew my visits because of the ex-

[1] Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, January 24, 1900.

cessive trouble that was developing, namely, the emaciation and weakness.

We followed along very patiently and very carefully, but produced no results until Dr. Kingman called December 20th, when he pointed out to me the difficulty which existed in this case, and which I am willing to confess I had not recognized, that the vomiting was due to an anteflexion of the neck of the uterus, whereas it had seemed to me in the normal position. There was a distinct angle between the neck of the uterus and the body at about the junction of the vaginal wall and the uterus. Dilatation had been tried by me but without result. Dr. Kingman suggested relieving the pressure by packing the vagina, and so raising the uterus and giving nature an opportunity to straighten out the flexion. That was not altogether successful, that is, immediately so, when he sent me a ball pessary, to be inflated after it was put in position, for the purpose of pressing the neck of the uterus back. For a few days this use of the ball pessary was satisfactory. Our plan was to leave the ball in position twenty-four hours, follow its removal with a cleansing douche, and then replace the pessary. This, however, produced so much irritation and discomfort to the patient that we decided to discontinue its use, substituting therefor a small, soft-rubber pessary, which raised the uterus and also gave an opportunity for the cervix to straighten itself. These means were followed with the most satisfactory results. The temperature was a very variable factor in the latter part of December, showing a periodic rise every second day, suggesting possibly a malarial infection as a complicating factor; that disappeared as a mere chimera.

The first relief that was noticed did not come until about a week after the endeavor to correct the malposition by the use of the pessary. The vomiting kept up about a week. After about a week the patient began to sleep. The nurse's reports showed each morning that the patient slept well the preceding night, whereas she had had constant nausea through the daytime and night-time and vomiting regularly every two hours through the day and night. In a very short time the nausea began to decrease during the daytime, and the periods between the various attacks of vomiting were increased. I remember well with what joy we all welcomed the report that she had gone two or three times, during the twenty-four hours, five hours without vomiting. On January 8th vomiting entirely ceased and the patient began to eat with the utmost freedom. The coated tongue disappeared; loss of appetite disappeared; food began to be relished and digested by the stomach without any medication until January 20th, when there was another twenty-four hours of vomiting. This attack of vomiting, I think, was sufficiently explained by two or three circumstances. Suffice it to say that since then there has been a return to the generous diet with an ever-increasing appetite. The emaciation which had characterized the early weeks and the excessive weakness have entirely disappeared, flesh is returning, and everything promises the very best of happy results.

APPOINTMENT OF C. W. GREEN, M.D.— Dr. C. W. Green, of Leland Stanford University, has been appointed to the professorship of physiology in the University of Missouri. Dr. Green is an A. B. of Leland Stanford, 1892; A. M. of 1893, and Ph. D. of Johns Hopkins in 1898.

THE QUESTION OF SUPERNUMERARY FALLOPIAN TUBES; WITH SPECIMENS OF FALLOPIAN TUBES WITH SUPERNUMERARY OSTIA.[1]

BY AGNES C. VIETOR, M.D.,
Assistant Surgeon, New England Hospital, Boston.

WITH the tendency of the modern science of medicine to be increasingly exact in all matters of detail, there is to be observed a growing tendency to be similarly exact in the use of words to express such details. The widespread training in laboratory methods of analysis and observation has its effect not only on the cortical areas which receive the sense impressions but also on those associated areas which attempt to transform these sense impressions into words. Who that has studied the karyokinesis of cells, for example, and has recorded the wonderful impressions received through his eyes, but has enriched his vocabulary, and has found his words more mobile and their combinations more facile and suggestive of the fairy-like evolutions of the nuclear network?

One traces this line of thought in the tendency of later writers to an increasing delicacy in the use of the word *supernumerary*, as distinguished from the related descriptive word *accessory*. As I say this last phrase, we feel as though we had passed through a laboratory door, since it is only by the use of the finer, more painstaking methods prevailing in the laboratory that such distinctions are determined.

As to the subject of this paper, when one finds a Fallopian tube with two fimbriated extremities, one's older thought is, This is a "double Fallopian tube," a case of "supernumerary tube." And on looking up the literature, one will find such cases so recorded. I wish to ask whether the other, the newer, the later method of thinking will so quickly be satisfied with the same answer.

I have here a beautiful specimen of a tube with double fimbriated extremity, which Dr. W. F. Whitney is kind enough to loan us from the Warren Museum; and I have also a similar but more complex specimen from my own collection. You will find a certain number of such cases reported by various observers since about 1851. There are curious variations in the experience of those who have searched for them. The earliest writer I have found is Richard,[2] who, in examining 30 bodies, found more than one fimbriated extremity in five subjects. Sappey[3] was stimulated by Richard's report and he found in one year 10 cases in 109 dissections; he continued his searchings, and later announced as his conclusion that this anomaly occurred in the proportion of about one in 16. Alban Doran,[4] in nine years, examined 1,000 uterine appendages; he found malformations of the Fallopian tube in only six cases, five out of the six being removed in the course of operations. Even less fortunate was the experience of Winckel,[5] who reports one of his assistants searching a large series of tubes and finding abnormal ostia only twice.

One finds the Fallopian tube the subject of many vagaries: it is misplaced; more or less atrophied; wholly or partially impermeable; detached from the uterus; absent on one side or on both sides; finally,

[1] Read before the Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, January 24, 1900.
[2] Pavillons multiples rencontrés sur des Trompes Utérines, Gaz. Méd. de Paris, 1851.
[3] Traité d'Anatomie Descriptive, 3 ed., Paris, 1875.
[4] Malformations of the Fallopian Tube. Transactions London Obstetrical Society, xxviii, 1886.
[5] Lehrbuch der Frauenkrankheiten, 1886.

as in one instance, no trace of it is found except the fimbriated extremity. In the literature to which I have had access I find no report of two tubes on one side. You will notice the vagaries I have enumerated are not specially interesting; they are the common variations of every organ or tissue in the body.

The special interest in the Fallopian tube lies in its outermost part, about the region of the outer third and the abdominal opening — the fimbriated extremity.

(1) The most common variation here is the presence of more than one fimbriated extremity. The supernumerary openings, or ostia, may be one or more in number (one to three), and resemble the terminal ostium in being surrounded by fimbriæ and by leading into the canal of the tube.

(2) Another variation is the appearance of a bunch of fimbriæ without an ostium but growing from a pedicle which springs from the wall of the tube a varying distance from the fimbriated extremity. [Doran reports a modification of this (*a*) in which the pedicle had atrophied and the fimbriæ appeared to lie loose in a fold of the broad ligament; and he reports a case (*b*) where the fimbriæ were attached to the pedicle of the hydatid of Morgagni, and a second case (*c*) where the hydatid of Morgagni had disappeared, and in its place was a bunch of fimbriæ on a long pedicle.]

(3) The third variation is the presence of a tubular prolongation projecting from the main tube, after the manner of a branch; this tube may be blind and may have fimbriæ at its extremity and along its side. [Klob has called attention to a small example of this blind tube amounting to little more than a small bulging of the wall of the tube, which is thinned at the apex and situated near the root of the normal fimbriæ; an example of this is seen in my specimen.]

It seems quite possible to trace a relationship between these last two classes and to combine them into one, making the second class the presence of a secondary projection from the wall of the tube, this projection being impervious, like a pedicle, or ending in a blind extremity and containing a canal communicating with the canal of the tube; in either case the projection may have fimbriæ attached to its extremity or along its side.

Further, it now seems possible to trace a relationship between this second class and the first class and to combine them into one. We would then say: The outer portion of the Fallopian tube may vary in the direction of supernumerary fimbriated extremities. These supernumerary extremities may be (*a*) exact counterparts of the normal fimbriated ostium; they may appear (*b*) as minute fimbriated openings in the side of the tube; (*c*) as groups of fimbriæ attached to the side of the tube without any opening; (*d*) as groups of fimbriæ attached to a tubular prolongation of the wall of the tube, this *accessory* tube opening into the cavity of the main tube but not into the peritoneal cavity; (*e*) as groups of fimbriæ attached to a solid prolongation of the wall of the tube without any opening into the cavity of the tube or into the peritoneal cavity, and, finally, (*f*) as groups of fimbriæ which may be attached to, or may replace, the hydatid of Morgagni.

We know there is general agreement among embryologists that the Fallopian tubes develop from the ducts of Müller, but there is some diversity of opinion as to the origin of this duct, and it is generally felt that it is to the origin of this duct that we must go to find an explanation of the variations enumerated above. It is agreed that the ducts of Müller arise in the neighborhood of the Wolffian ducts, one on each side of the median line; that these Müllerian ducts converge and grow backward, uniting in their middle and lower portions to form the uterus and vagina, but that they remain separate in their upper portions, forming the Fallopian tubes. The diverging views are as to the mode of origin. Briefly stated, according to one group of embryologists, the Müllerian duct first appears as a groove which closes in to form a closed tube, and later opens again at its outer portion to communicate with the peritoneal cavity, the edges of this secondary fissure developing fimbriæ. According to this theory, supernumerary ostia are due to a faulty closure of the edges of the secondary fissure. Doran adopts this theory and explains the blind accessory tube as probably developed through an eversion and prolongation of one of the edges of the primitive groove of the Müllerian duct. He does not suggest how the fimbriæ would then be added.

The majority of embryologists, however, claim that in all amniota the epithelial covering of the Wolffian bodies, where these latter project into the pleuroperitoneal cavity, proliferates, and that a triangular area of this epithelium then becomes invaginated, forming an oblique funnel with a closed, tapering apex, the mouth of the funnel being open and corresponding to the abdominal opening of the Fallopian tube. The closed point of the funnel grows rapidly backward, elongating as a solid cord which becomes a canal by the gradual backward extension of the lumen of the funnel into the cord.[6] It is at once evident that any variations in the abdominal end of the Fallopian tube occur at the very beginning of the development of this duct of Müller.

I have seen no hypothesis as to the formation of supernumerary ostia according to this mode of origin of the Müllerian duct, and I now venture to advance one. In studying the comparative embryology of the development of the Fallopian tube, I have been impressed with the resemblance between the normal development of this organ in birds (especially in the fowl) and the types of abnormal development which have been enumerated in this paper. In addition to this, all embryologists have been impressed by the fact that the early stages in the development of the embryo in mammals closely resemble those of birds. As a further evidence of the relationship existing between man and the fowl, I might call attention to the fact that the occasional atrophy of one Müllerian duct, and the consequent occurrence of a one-horned uterus, is an abnormality in man corresponding to the normal state in the fowl, where one Müllerian duct habitually atrophies, leaving only one side functionating.

In the development of the Fallopian tube (oviduct) in birds, both groups of embryologists agree that the abdominal end is more or less multiple. On the one side, it is said, "The invagination [of the mesothelium] is somewhat irregular, so that there may be more or less marked modifications of from one to even three or four invaginations." The other side says, "In the fowl, Sedgwick and Balfour have shown that the anterior end of the Müllerian duct arises as three grooves connected by an internal thickening of the peritoneum of that region. The thickening separates as a solid

[6] Minot: Human Embryology, 1897, p. 245.

rod of cells which before long acquires a central lumen. The whole structure now consists of a short tube opening anteriorly into the body cavity by three ductules. . . . The permanent abdominal opening [of the oviduct] or fimbriated extremity corresponds with the anterior of the three grooves, the two posterior disappearing. . . . The hydatid [of Morgagni] is probably a degraded remnant of a primitive tubule." [7]

It is not out of accord with similar occurrences in the development of the embryo to think that occasionally the evolution of the embryo halts in this particular point, attempts to revert to an earlier type, then impelled to advance higher in the scale, responds to the impulse, but does not quite succeed in removing all traces of its momentary faltering.

The only missing link in the specimens reported is the intermediate form of an accessory tubule not only crowned with fimbriæ but opening also into the peritoneal cavity. Bovée [8] recently reported the case of a Fallopian tube with two fimbriated extremities, one of which led into the normal canal of the tube; the other opened from the peritoneal cavity into a canal about two inches long; beyond this point the probe would not pass. As the tube was not removed, a dissection could not be made. Possibly this is my missing link.

Description of tube shown by writer.— Both tubes, with large cystic ovaries, were removed from a profoundly anemic adult who suffered from uncontrollable menorrhagia.

The abnormal tube is six centimetres long (one centimetre longer than the tube on the other side) and both tubes seem more slender than usual. Nothing noteworthy about the fimbriated extremity, which is similar to that on the other side. On the upper surface of the tube, about five millimetres internal to the fimbriated extremity, is a second ostium, similar in every respect to the terminal one, but about five millimetres across its base. It communicates with the canal of the tube and with the terminal ostium. About four millimetres internal to this second ostium is a small tuft of fimbriæ, one and a half millimetres across the base, apparently growing directly from the wall of the tube. Just internal to this, separated by about one and one-half millimetres, is a small blind pouch, lik a sacculation of the wall of the tube. It measures six millimetres across the base and projects about five millimetres beyond the surface of the tube; it opens freely from the canal and it shows no trace of fimbriæ. About two millimetres internal to this is an apparently solid projection from the wall of the tube, measuring three millimetres across the base and projecting about three millimetres beyond the surface of the tube. Its summit is crowned by a tuft of fimbriæ. Apparently it has no communication with the canal of the tube, or with the peritoneal cavity.

Her Hair a Woman's Glory. — A young woman has brought suit for $10,000 damages against the Metropolitan St. Railway Co. of New York for the loss of her hair. While alighting from a car she was thrown to the ground and received injuries to her head which rendered her unconscious. She was taken to the J. Hood Wright Memorial Hospital, where her hair had to be removed for the treatment of her wound.

---

[7] Haddon: An Introduction to the Study of Embryology, London, 1887, p. 251.

[8] National Medical Review, July, 1899.

Reports of Societies.

SUFFOLK DISTRICT MEDICAL SOCIETY. SECTION FOR CLINICAL MEDICINE, PATHOLOGY AND HYGIENE.

J. BERGEN OGDEN, M.D., SECRETARY.

Regular meeting, Wednesday, January 17, 1900, Dr. H. F. Vickery in the chair.

Dr. H. F. Hewes read a paper entitled

A STUDY OF THE NATURE AND SIGNIFICANCE OF THE SYMPTOMS IN DISORDERS OF THE STOMACH.[1]

Dr. Cutler: I am very much interested to hear Dr. Hewes's paper, but I am surprised at some of the figures he gives. Although I never tabulated what cases I have had, I had supposed that the diseased condition could be made out from the symptomatology a little more frequently than he has given in his statistics. I should say his estimate in his last statement that in 50 per cent. of cases the chemical examination is of service is rather a conservative one, which shows how misleading general impressions may be. I should have supposed that its service was a good deal more than that. The especial value, I think, of his investigation is that it occurs here amongst patients such as we all of us meet. We do not have to compare our findings with those of some foreign source or another city. I was rather surprised at the small number of cases of increased acidity he found. I should have supposed it would have been a good deal more than 84 out of 250 cases. I feel convinced that this method of research is one which is going to be of very great value to us, and it is the only way we can make our knowledge of service.

Dr. Joslin: The paper is especially interesting because it illustrates how little value can be attached to the examination of the chemical contents alone. Forty-eight per cent. of these cases showed normal condition of HCl, but did not have normal digestion. This is not strange. The amount of acid in the stomach does not correspond more closely to the symptoms, because the symptoms of which the patients complain are the average of their symptoms for the last day, week, month or even years. The examination of the stomach, on the other hand, is at one special hour, and that when patients are under considerable nervous strain. In the next place, symptoms of hyperacidity occur late in the morning, several hours after meals, but the test breakfasts are given early and on an empty stomach. At that time the mild cases have no symptoms of hyperacidity. It is more surprising to me that 72 did show the HCl increased under such conditions than that some others did not.

The amount of hydrochloric acid is a variable factor anyway, and Rosenheim has pointed out that in cases of nervous dyspepsia on one day the acid in the stomach is increased, on another day normal, and on still another diminished. Riegel [2] has lately called attention to another influence which must be considered. It is known that HCl is secreted if one simply chews bread, and that a greater amount is formed if, instead of bread, meat is chewed. Riegel examined a cook with this in view, but found that neither bread

[1] See page 501 of the Journal.

[2] Münch. med. Woch., 1899, No. 45.

nor meat led to the pouring out of the acid. An Ewald test breakfast also failed and it was only after the mechanical irritation of meat on the stomach wall itself that the acid appeared. Here was a case which ordinarily would pass for achlorhydria, but in reality was not.

As to the normal standard of acidity in Boston, Dr. Hewes's statistics are most suggestive. It is certainly a very good idea to form a standard of our own, and all should contribute, that we may have many cases on which to form an average. We must remember, however, that ulcer of the stomach in Boston is more common than in many other cities and *possibly* this may be due to the greater acidity of our stomachs. Thus, after all, our standard of acidity may be a diseased standard.

In Eccles's book on "Difficult Digestion" no mention is made of the strength of the acidity of the stomach. This is but one of the faults of this very readable little book, but it illustrates how easy it is to let one single symptom dominate the whole clinical picture. When a diagnosis of gastric disease is made, it must be based, as far as the examination of the stomach is concerned, on its chemical condition, its position and, much more, its motility. Only when these three are combined are satisfactory results obtained.

DR. SMITHWICK: I have been very much interested in Dr. Hewes's paper. In a general way I should agree. I have examined about 150 cases carefully in the last year and a half, and it seems to me that only in a small proportion of the cases can you get an accurate idea of the stomach from the symptoms. Dr. Joslin's remark about the prevalence of ulcer in this vicinity affecting the standard for normal acidity as determined by Dr. Hewes recalls a case that I examined in the Out-Patient Department of the City Hospital. By the way, I would say I think the point he made was ingenious, but a little bit overdrawn; still, this case might emphasize the liability of overlooking ulcer even in the presence of symptoms. A nervous, but healthy-looking girl, with varied symptoms, a case of Dr. H. D. Arnold's, was observed two weeks and several analyses made. We were unable to come to a conclusion as to what was the matter, the patient's untruthfulness casting suspicion on all of her statements. At last Dr. Arnold recommended her to the house for constant observation. Soon after admission to Dr. Buckingham's service she vomited a large quantity of blood. This occurred two or three times. Before admission the acidity was a low normal.

What Dr. Hewes has said about cases of low acidity showing all the symptoms of high acidity is quite commonly seen, and I think that is especially noticeable in the cases of hyperchlorhydria, which temporarily have a remission. I can recall six cases examined recently where the free HCl and total acidity were both at a low normal, and where successive examinations proved a hyperchlorhydria later; perhaps the sixth or seventh examination would show a marked hyperchlorhydria. My most marked case of hyperacidity as judged by symptoms was one of continuous secretion where there was hypochlorhydria. In this case I examined both in the morning and in the afternoon and after different test meals. What Dr. Joslin has said about the test usually being made in the morning certainly has some truth in it, but in the marked cases of hyperchlorhydria successive examinations will usually bring it out. If I suspect it I always make an examination in the forenoon.

I have done a careful digestive test in practically every case, especially those examined for data, but am not sure of how great practical value that is. Simon seems to think that the estimation of pepsin secretion gives more exact evidence of the condition of the stomach than the estimation of free HCl.[3] Certainly the pepsin estimation often suggests a pathological basis for symptoms that might otherwise be considered imaginary. A good example was a case reported by me at the October meeting. A girl who evidently had had gastric ulcer, treated in the hospital in Dr. Williams's service, later came to the out-patient with symptoms, to her, just like those of the previous attack, and examination showed perhaps one part to 1,000 of free HCl. Nobody doubted when she came that it was a case of ulcer. The digestive test was delayed about five hours. At that time we concluded that only gastritis was proven, but the treatment was for ulcer, on account of the symptoms. Several examinations at intervals showed no blood and gradually the digestive period shortened as the free HCl increased. I think sometimes the digestive test will point out a mild gastritis that otherwise you would miss if you simply made the test for HCl.

DR. PRINCE: If I may say one word on this subject, I would like to, because I would like to advance a theory for the explanation of symptoms in cases of this kind which seems to me to offer the best explanation of them. Before doing so I would like to say one or two words on some of the other points brought up here, and, first, in reference to the one upon which Dr. Joslin anticipated me, namely, that of the fallacy of test examinations made in the morning. Looking at it purely from a clinical point of view we are well aware that many patients can digest without discomfort in the morning and cannot digest at other times of the day; some digest in the middle of the day and cannot in the morning, some at night, etc.; therefore whatever may be the results of an examination after any given meal these do not, it seems to me, necessarily give us an insight into the condition of the stomach at other periods of the day. When I say do not digest, I mean, of course, do not digest without difficulty. I think a most common condition for dyspeptics is to be able to digest a light meal, such as is the ordinary test meal in the morning, although they cannot digest except with the greatest difficulty their lunch or the evening meal, so that it has always seemed to me that the inferences on which these things are based have certain fallacies. However that may be, this question of motility of the stomach is one of the most important of those connected with the symptomatology of functional diseases of the stomach, for inasmuch as the expulsion of the contents is essential to perfect digestion, if that is disturbed the symptoms are quite as likely due to it as to primary chemical changes in the contents.

I have been very much impressed by the results obtained by Dr. Hewes in this very thorough and systematic series of observations. It seems to me, on the whole, one of the most valuable contributions which has been given to us upon the subject. It is good work, a real contribution to medical science.

Regarding his theory of irritation in explanation of the symptoms, it seems to me that it is a very plausi-

[3] Simon's Clinical Diagnosis, p. 143.

ble theory, and has much to be said in its favor. It certainly is a far better explanation than that based upon the chemical contents, and yet an objection can be made to it which I think has some significance. Yet it does not seem to me that irritation is quite a satisfactory explanation, because, as he himself has already told us, there are cases of hypoacidity which were relieved by an alkali. Now unless he assumes that the irritation was afterwards due to later secondary acid formation it would hardly seem there could be any irritation from the absence of HCl, yet at the same time be relieved by an alkali. Furthermore, we know most intense gastric symptoms occur before it is possible to have any secondary changes, and at a time when the food must be substantially unchanged in the stomach. The explanation which I would like to offer, which has seemed to me from thinking upon the subject is the most probable explanation of the symptoms, is this: I think we ought to take a broader view and look at it from a biological standpoint. I mean this: We ought to look at it from analogy with other organs the functioning of which is better known. Take the eye, for instance. It is a physiological law that when any organ of the body performs its functions with difficulty the performance of its functions is always accompanied with pain or its equivalent. The hypermetropic eye, as a rule, cannot see without pain. The eye performs its function perfectly or may perform it perfectly; it does see, and is able to do its work, but the doing is accompanied by pain or its equivalent. Take the heart; in cases of interstitial myocarditis, where the heart structure is weakened, a most common symptom is pain extending down the arm; not only pain in the precordia, but extending down the arm. There we have again an organ doing its work with difficulty and accompanied by an "associated pain" or its equivalent. Take the bladder; whenever the bladder finds a difficulty in holding or expelling its contents it is accompanied by pain, whether that difficulty be functional or organic. I have seen most distressing symptoms of a purely functional nature referable to the bladder and due entirely to a functional difficulty of holding or expelling the urine. Take the ear; Erb has reported cases in which hearing was accompanied by pain. The pain and other disagreeable symptoms accompanying functional uterine trouble is classical. We all know it is sometimes absolutely impossible to explain the pain accompanying menstruation by any of the anatomical facts that are found. Even in the muscles there is a disagreeable symptom known as *akinesia algera*. Any attempt to use the muscles when they are weakened by functional disease, especially in neurasthenia, is accompanied by pain. So we find that the functioning of the eye, the ear, the heart, the bladder, the uterus, when performed with difficulty is accompanied by pain or its equivalent, as a physiological law, even where there is no irritation whatever. Now, if we apply the same law, which certainly is true of all the organs of the body of which we have any complete knowledge, to the stomach, I think we may have a probable explanation of the symptoms accompanying these functional diseases of the stomach; in other words, I would look upon pain and the other distressing symptoms as simply associated phenomena. They are association symptoms of that kind which follow as a biological law. When we are asked what is the cause of these associated symptoms I think it is not difficult to find it in the law of the diffusion of energy. It is not necessary at this time to go deeper into the question of the pathology for the purposes of the hypothesis, for I am dealing with general principles. But to illustrate what I mean I may say that, undoubtedly, the pains in the head and eye which accompany eye strain are due not to any real irritation of the eye, but to the diffusion of the nervous energy which is required for the increased strain to hold the muscles of the eye at that tension which is necessary for proper vision; the nervous energy is diffused to the sensory centres as well as to the muscular centres. It is probably the same law which holds in all the various organs of the body. That at least seems to me, from long speculation on this subject, as the most likely hypothesis. It certainly is more in harmony with the clinical facts as brought out; for, as Dr. Hewes has pointed out, we find the same symptoms where there is very little acidity and where there is a great deal of acidity, and I think if we take a broader view of it, that so far as treatment is concerned we are much more likely to get at successful results than if we take the narrow view and look for the symptoms of changes in the chemical secretions alone.

I want to say in closing I have rarely listened to a paper which has impressed me so strongly as this paper to-night by Dr. Hewes, and I think he has done much to clear up a great deal of hazy knowledge which some of us at least have had in our minds on this subject.

Dr. Vickery: It occurs to me that we have etiology as one important guide in the treatment of stomach cases, perhaps a comfort to us to bear in mind, considering the uncertainties of symptoms and the as yet unsettled questions about chemical and other attempts at accurate analysis of the physical condition. Patients treated according to the etiology of their cases will pretty often respond favorably. I would like to ask Dr. Hewes whether treatment adapted to the chemical reactions independently of the symptomatology of the cases is almost always satisfactory in its results.

Dr. Joslin: I should like to ask Dr. Hewes how close a connection he has found to exist between the condition of the tongue and hyperacidity.

Dr. Hewes: I did not mean to imply, as Dr. Cutler apparently understood it, that the analysis of the contents was useful in only one-half the cases. I said that it gave evidence of abnormality of the secretion in this per cent. of cases. The finding of a normal condition, as in the other half of the cases, is also of use towards our understanding of the case.

In answer to Dr. Vickery's question I should say that the treatment of the cases upon the lines of the findings by analysis gives very satisfactory results, curative results in at least 75 per cent. of the cases in which abnormality of a chemical nature is present. Treatment along these lines is in my experience about twice as successful by this method, if we consider rapidity of relief, as that instituted without analysis of the contents. The proper treatment is now as a rule instituted at the start. Formerly we had to experiment with treatment to reach our conclusion in regard to diagnosis.

I should not agree with Dr. Joslin's suggestion that the facts that the average acidity of the stomach in Boston determined in this way was higher than in other places, and that gastric ulcer was more common

in Boston than elsewhere, indicated that the average stomach was abnormal in its secretions. The association of these facts may indicate why gastric ulcer is more common; that is, it may serve as a suggestion of the causative connection of high secretion of hydrochloric acid and gastric ulcer.

It is quite true, as several of the speakers have suggested, that the chemical findings at a given time are not necessarily representative of the findings at other periods. Our patient with a finding of normal acidity at the time of examination may suffer from his hyperacidity at a later period of the day than that at which we obtained the contents. A negative finding does not in all cases rule out the existence of some chemical abnormality as a cause of symptoms. Where a positive finding exists with symptoms, however, we are justified in treating our case according to the indication of the analysis and shall if we follow this rule, have a much clearer understanding of our stomach cases and a much greater success in their treatment than if we relied upon our symptoms. For these, as we have seen, give no indications of a positive nature in two-thirds of our cases.

I wish to say in closing that this paper is not intended as an exact consideration of the usefulness of the method of analysis of the gastric contents as an aid in clinical work. Such a presentation would include the records of the study of individual cases over long periods, and of the results of treatment, etc., and other control data in reference to the accuracy of our findings by this method. I have merely given you the results of some observations, in which by the use of these methods, we have succeeded in gaining some knowledge of value to the understanding of the disorders of the stomach.

In regard to what Dr. Prince has said in connection with the theory of the nature of symptoms, I meant my explanation to convey much of the same idea as his hypothesis. I spoke of irritation or hyperesthesia merely as examples of causative factors in some cases. Dr. Prince's explanation is, however, much more complete and clear than mine and my observations would lead me to adopt it as the most probable hypothesis of the nature of those symptoms which are constant in all or most of the disorders studied.

SUFFOLK DISTRICT MEDICAL SOCIETY.
SECTION FOR OBSTETRICS AND DISEASES OF WOMEN.

C. H. HARE, M.D., SECRETARY.

REGULAR meeting, Wednesday, January 24, 1900, DR. R. A. KINGMAN in the chair.

DR. AGNES C. VIETOR read a paper on

THE QUESTION OF SUPERNUMERARY FALLOPIAN TUBES, WITH SPECIMENS OF FALLOPIAN TUBES WITH SUPERNUMERARY OSTIA.[1]

DR. C. H. WINN reported a case of

BICORNATE UTERUS, WITH TWIN PREGNANCY; ABORTION FROM ONE HORN.[2]

DR. BRECK: Has the uterus been examined since the labor?

DR. WINN: No, it has not.

DR. KINGMAN: That is a point I had in mind, and I am sorry I did not ask Dr. Winn to urge her to allow another examination.

It occurred to me while Dr. Winn was reading the paper that this case is instructive in connection with the paper to follow. I doubt not we shall hear something about the Copeman treatment by dilating the cervix. If dilatation of the cervix is of any value in the treatment of vomiting of pregnancy this ought to have been a case in which to note benefit, because the cervix was dilated so as to admit the finger and curette, to allow the fetus to pass out and the gauze packing to be put in, and yet the vomiting was extreme from the day of the operation, more so than before. I believe it is very common in the ordinary normal uterus for pregnancy to begin in and develop from one horn.

DR. VIETOR: I want to ask the Chairman how he was able to make that diagnosis, excluding fibroid of the uterus, for example, and whether he felt the depression between the two horns on which the books lay so much stress. I have not met a case of any of the varieties of double uterus myself, but I have a patient now under observation who suggests to me the possibility of a double uterus because I find an unsymmetrical contour which I am not able to explain. The right horn of the uterus feels normal, the left one appears to be flattened and, if I might express it so, as if it extended into the tube, were elongated, as we see in the pictures of the uterus unicornis; it suggests one of those pictures, but I distinctly feel the right horn and I have not been able to make out any depression near the fundus. I would like to know of how much practical value that symptom is. There are complications in this case that I think may make a celiotomy necessary and I shall be able to verify the diagnosis later.

DR. KINGMAN: So far as I know, she has never been examined except during the pregnant state, so that the exact contour of the uterus is not known, but at the time I examined her there was a typical normal pregnancy, and upon that was this mass that has been referred to, which did not have the ordinary feel of a fibroid, but a soft elasticity which comes from the softening of the uterus during pregnancy. The further fact that Dr. Winn, while treating her during the abortion a year or two previous, when he gave her several intra-uterine douches and examined thoroughly, found no suggestion of any tumor, and the absence of any subsequent indications of tumor, would tend to confirm the diagnosis. It is only a matter of inference, not given as a positive diagnosis. The suggestion is very well made by Dr. Vietor.

DR. E. L. TWOMBLY reported

A CASE OF PERNICIOUS VOMITING OF PREGNANCY.[3]

DR. H. S. KNIGHT, of Worcester, also reported

A CASE OF PERNICIOUS VOMITING OF PREGNANCY.[4]

DR. BOLAND: I have been very much interested in the papers and hope to profit by what they teach. I am not willing to accept it as all due to malposition of the uterus, because it cannot explain the persistence of vomiting; after four months the uterus rises out of the pelvis and there is no further possibility of flexion or malposition. I have patients

[1] See page 513 of the Journal.
[2] See page 511 of the Journal.
[3] See page 510 of the Journal.
[4] See page 512 of the Journal.

I have carried through several successive pregnancies who vomited up to the delivery, and who dread pregnancy not from the labor but from the nine months of nausea and misery. I have been blundering along painting the cervix with nitrate of silver and possibly doing some corrections of malpositions with the old Ferguson speculum. In the last twelve years I have never seen a fatal case and never had but one case in which an abortion had to be induced. There is one objectionable point in regard to the treatment, and that is packing the cervix. We are taught to do that to bring on labor, and I remember one poor woman I did not do very much for and she called some one from the dispensary and he promptly packed her and she promptly miscarried. I should like to ask how you would avoid a possible miscarriage in consequence of packing?

Dr. Vietor: I have had no experience with the pernicious vomiting, but, in common with all physicians, I am troubled by the vomiting of my pregnant patients. In some cases I am able to relieve it; in some cases I am not. I was rather skeptical at first, but I have had some very good results from the method mentioned by the last speaker; that is, painting the cervix and cervical canal with nitrate of silver. I began by doing it really as a matter of the last resort and was surprised to find occasionally I have had very good results from it. Then I have used the same remedy with a definite purpose in cases where I had reason to suspect a gonorrheal infection. In several such cases I have found the nausea and vomiting, as well as the local symptoms, relieved. I have also corrected the malpositions of the uterus, and have used tampons, pessaries and postural treatment; and then I think I am perhaps inclined to lay a great deal of stress upon the general treatment of the patient. I am not satisfied that the cause is always a local one. Indeed, I question whether a changed metabolism may not really be at the bottom of it. It has seemed to me in many cases that at least the predisposing cause was in other portions of the body, for instance, in the digestive tract. In one case I had the patient ride a bicycle. She had been riding a bicycle a long time, but had discontinued it and thought her vomiting was progressively worse. I had her try it again under my supervision; in less than a week the vomiting stopped. The patient was a skilled and careful rider; she continued to ride till the seventh month and remained in perfect health.

Dr. Fay: This subject is of particular interest to me on account of a case to which I was called as being probably a case of pernicious vomiting. There was a history of two previous abortions, the last at any rate, and I am not sure but the first, to save life, the belief being that vomiting could not otherwise be stopped. This was about the third month of the third pregnancy. The patient was of good physique and otherwise in good health, but could not rise from her bed without a good deal of vertigo. There was persistent vomiting some ten days before I saw her. I tried the usual remedies, such as oxalate of cereum and bismuth, for a day or two with no result, painted the cervix of the uterus with nitrate of silver with no direct result. I noticed one thing on account of which I speak of the case, not knowing how common it is. The vomitus seemed to be a very large quantity of clear, limpid mucus very much like salivary fluid, as though it was secretion from the salivary glands that passed into the stomach. I have had a patient with very marked salivation during every pregnancy without the vomiting being very persistent, with which I compare it, and it seemed to me in this case there was persistent swallowing.

The patient was partially conscious of swallowing, until the stomach seemed to be loaded and then this came up. After further vomiting it appeared a greenish, thin fluid. Finally, while taking fractions of a drop of iodine improvement began and the condition passed to a condition of reasonable comfort.

Dr. Breck: I recall three cases. The first was a lady in whom pernicious vomiting recurred several times. I saw her with the late Dr. Doe. She had abortion performed at that time, and she has had it also two other times, I think, with relief. The second case was a patient of the lower ranks of society who had vomiting which I think could fairly be called pernicious, lasting weeks and weeks. No local cause was apparent, medical treatment was given and cervical applications; finally recovered. The third case was a fatal one which I saw in the country, almost in the backwoods, with a physician who had not recognized the pregnancy, thinking the case one of tumor, and in that case at the time I saw the patient she was *in extremis*. The pregnancy must have been about five months advanced, yet the vomiting had continued. We delivered the fetus, but the patient died within a few hours. It is reasonable to suppose if that case had been operated on as Dr. Twombly advises the patient might have been saved. I think it is a fact that even induction of labor does not always relieve.

As to the cause of the vomiting, this question of anteflexion has interested me. I do not exactly understand the way in which it is supposed to cause vomiting. I feel sure that in many of those cases some other cause is at work. We know that where vomiting persists with retroversion and sensitive uterus, evidently a congested one, if we replace that and relieve the congestion vomiting ceases as a rule, and I also suspect that in many of those cases the congested condition exists from prolapse or some other cause, and the packing and treatment such as has been described may relieve not by relieving the anteflexion, but by relieving the uterine congestion which exists. I simply throw that out as a suggestion.

Dr. Kingman: I have been thinking much upon this matter during the past dozen years and have definite ideas with which you may not agree. I would assert that those who treat vomiting of pregnancy on scientific lines with a definite theory at the bottom of their method will get much better results than those who treat empirically. Why one should treat the stomach for vomiting caused by trouble in the pelvis is more than I can understand. In many cases there is disturbance in the stomach or intestinal tract that wants attention, just as one should attend to the teeth or skin or any other part of the body that is affected. But I want distinctly to draw the line between the vomiting *of* pregnancy and the vomiting *in* pregnancy. They are two different things. Vomiting may occur from gastritis, cancer of the stomach or obstruction of the bowel, but that has nothing to do with the pregnancy. We are talking now of the vomiting *of* pregnancy, that is, vomiting directly and distinctly and only caused by the pregnancy. I desire to state as my belief that there is absolutely no difference whatever, except in degree, between the

ordinary so-called physiological vomiting of pregnancy and the pernicious vomiting of pregnancy. People take it for granted that the ordinary vomiting of pregnancy is a thing to be expected. Patients are told that it comes to every one. It does not come to every one. A woman who has a healthy uterus and pelvis and cervix does not vomit and this exemption I have been able to predict. Now, believing that there is a definite cause for the vomiting of pregnancy and that the cause resides in the pelvis, I want to urge upon you, and upon any one to whom this word may come, the importance of ascertaining definitely what the cause of vomiting is in severe cases and of possessing a good theory for the probable cause in the mild cases which do not necessitate examination. Treatment can then be instituted on an intelligent basis. Believing, then, that there is a local cause, and believing that the cause ordinarily pre-exists before the pregnancy, I believe that we ought to look out for prophylaxis. I have operated upon many patients in the past few years who would, I believe, were they to become pregnant, be subject to pernicious vomiting of pregnancy. Such patients have an extreme anteflexion of body and cervix, the uterus being held back firmly against the sacrum by contracted uterosacral ligaments. We do not cure these cases. Ask the gynecologist how many cases of extreme anteflexion he has cured, and he will tell you, very few.

Now with regard to the cause, Dr. Boland has questioned whether it is always anteflexion. I do not believe it is; nor do I believe it is always displacement of the uterus. I would agree with Graily Hewitt in his statement that the vomiting of pregnancy is due in almost all cases to an irritation of the nerve fibres situated in the cervix uteri, chiefly of those fibres about the internal os. It may be that the irritation of the cervix is caused by retroversion or retroflexion. As the uterus dilates that cervix is pushed upwards against the anterior vaginal wall and flexion necessarily occurs. In the case of anteflexion the moment the uterus begins to enlarge and descend in the pelvis the cervix has still more compression. It is not only flexion, but compression of that cervix, and Hewitt's theory is that the irritation of those fibres is caused by anything which interferes with the normal expansion of the cervix. The body of the uterus expands with the developing ovum, the cervix is compressed, restricted, cannot expand. I have seen one fatal case, in which case there was no displacement, no flexion, but that patient had a tear of the cervix up to the internal os, which had been neglected. The whole cervix was to all intents and purposes a piece of cicatricial tissue. That cervix could not expand, could not yield to the expanding uterus, and had that patient lived she would probably have vomited to the end of pregnancy.

I would like to say with regard to the treatment of the simple forms of vomiting that mechanical means are better than stomach medication. As a routine treatment prescribe the knee-chest position, but be sure that it is properly used and that air is admitted to the vagina.

Copeman's method of dilating the cervix is simply a treatment of flexion of the cervix. In cases where the cervix will not yield to simpler methods it may be well to dilate, but I believe that if cases are properly treated in time it is never necessary to dilate, unless to produce abortion.

In closing I want to urge once more that you treat cases of vomiting of pregnancy from some scientific standpoint and not empirically. Do not pin your faith upon stomach medication, or Copeman method, or packing, or any other one thing, but find out the cause of the vomiting and treat it, considering the ordinary cases of everyday morning sickness as vomiting of pregnancy just as certainly as pronounced cases and not permitting patients to go on suffering three or four months until nature comes to their relief.

Dr. Boland spoke of a case that went to the dispensary and was packed and came back and aborted. I remember packing one case at the Boston Dispensary ten years ago with subsequent abortion. That was a case of incarcerated retroverted uterus, where the patient would in one week probably have been in mortal danger had the uterus not been gotten out of the pelvis. There is scarcely a more dangerous predicament for a woman than incarcerated retroverted uterus, and I do not believe the packing was as much responsible for the abortion as the disease that called for the packing.

DR. TWOMBLY: In reading my paper I purposely limited the discussion to the facts connected with the early months of pregnancy. We know that vomiting will sometimes continue into the late months. I purposely wished to limit my paper in the first point I made, namely, that the displacements and faulty positions of the uterus are more often the causes of excessive vomiting than has been generally supposed. I did not say that they were the only causes, but "more often than has generally been supposed," and that a careful, intelligent raising of the uterus, if it is displaced, and straightening out the cervix, will accomplish much. As Dr. Kingman has said, there is the vomiting *in* pregnancy and the vomiting *of* pregnancy and perhaps we should drop that term "pernicious" and say "excessive vomiting of pregnancy." I must second Dr. Kingman in his belief that the cause is in the cervix near the internal os Whether the nerve centres are within or near it is impossible to state, and I think no examinations post mortem have yet proved any pathological condition there. At the same time we know how sensitive the internal os is when we try to dilate, and we know the external os is comparatively not sensitive, and there are a great many cases in point where the cervix is bent and compressed, from which we get the symptoms reflex of vomiting. I cannot but think that the cause of much vomiting, as Graily Hewitt states, and as I asserted in my paper, is the compression of those nerves in the cervical tissue which are associated with this bent and indurated condition, and there is interference of the natural pliability and expansibility of the tissues. I should not agree entirely with Dr. Kingman when he says that Copeman's method of dilatation of the cervix need not be employed. It seems to me useful and it seems to me it is not likely to produce abortion if carefully employed. Certainly where we cannot entirely rectify a malposition of the uterus, we can gain a great deal by straightening the cervix by dilating so that the compression is taken off for a while. It gives temporary relief and allows those tissues in the natural cervix at least a chance to recover their tone and allow the growth of the fetus to go on. As regards packing, we do not pack the whole vagina. The packing is used to take the place of a pessary, to elevate in retroversion, or to push back in

anteversion and I have never seen packing cause abortion.

I wish there might have been more discussion on the second point, where we have found that all efforts do not avail, namely, the induction of abortion immediately, rather than waiting until the patient has lost her strength and health, vigor and vitality. The general opinion is delay, and delay to my mind is fatal, the long-continued delay such as practitioners are apt to advise in their cases. Although we do take a risk in emptying the uterus early, yet we have a much better chance to save the woman's life.

Dr. Boland: I have thought that the getting up in the morning might intensify the flexion or malposition. We have to remember that the stomach is an organ of uncertain equilibrium and its time of greatest lack of equilibrium is in the morning. The toper vomits in the morning. The intractable vomiting of pregnancy, as I have seen it, has continued throughout the day, as much after each meal as after breakfast. While I feel I have got some points to-night and shall try to put them in practice, I am not convinced but what there are some other factors than malposition in certain cases.

Dr. Breck: While the dictum has been given that the vomiting comes from the nerves about the internal os, I have not heard any direct proof whatever that such is the case.

Dr. Kingman: I do not think any proof has been given, but rather evidence gained in treating these cases and in watching the causes that apparently operate. There is also the self-evident fact that the vomiting is due to pregnancy and is present only in cases where an actual departure from the normal is found in that spot and nowhere else in the pelvis. It is a matter of inference, not a matter of scientific demonstration.

Dr. Breck: Would you regard the matter of tenderness important?

Dr. Kingman: Not at all.

Dr. Breck: You expect to find tenderness where there is irritation?

Dr. Breck: The body of the uterus very often is tender in retroversion, and the tenderness relieved by correction suggests the possible relation between relief of tenderness and relief of vomiting.

Dr. Kingman: A patient in my office this afternoon was severely nauseated when I touched a tear of the cervix, there being no tenderness whatever. The tear had been for some months a cause of nausea. Another case under my care two months, not pregnant, has had up to the time of treatment constant nausea from a flexion. You may have a reflex vomiting from a local disease without tenderness. I do not think tenderness is necessarily a part of it at all.

Recent Literature.

A Text-Book of Physiology. By Winfield S. Hall, Ph.D. (Leipzig), M.D. (Leipzig), Professor of Physiology in the Northwestern University Medical School, Chicago, etc. New York: Lea Brothers & Co. 1899.

The main fault with this book is that in it too much has been attempted and not enough accomplished — principally, it would appear, from lack of space. To write a book on general, comparative and chemical physiology, one would think would require the work of a lifetime, and a good-sized library to hold the result, yet here we have an attempt in 600 odd pages.

True enough, these subjects are all interesting, but for the instruction of a student is it not best to keep each of these studies separate? The lavish expenditure throughout the work of formulæ, chemical symbols and reactions is uncalled for — certainly an expert mathematician and chemist is required to understand them. The principal aim of the book seems to be that everything should be very concise, and in some cases it is carried to an unpleasant extreme — the physiology of "nerve muscle" could easily be benefited by a fuller description.

It may be noticed on p. 335, where the digestion of milk is discussed, that the statement is made that the "proteid pellicles which surround the oil globules are digested off and the oil escapes." Is it known that the oil globules in milk possess a proteid envelope? Surely this is a very definite statement settling, according to Hammerska, a very doubtful and difficult problem. The less said about the chapter on internal secretion the better. Cyon's work settles the physiology of the thyroid, and according to the author "other investigators confirm these theories of Gley and Cyon." In our judgment many other investigators do not.

The book is beautifully illustrated throughout, although on p. 61, Fig. 21, the drawing of a Pohl commutator is unique. Let us trust that some day it will be corrected. The figure illustrating the inter-relation of the food stuffs is excellent (p. 382). The letterpress and paper is of the best and the binding good.

In conclusion, it may be said that the reviewer, even after carefully reading the preface, is doubtful for what class of readers the book is intended, and to what class it will be the most beneficial, — to the unfortunate student, the hard-driven practitioner or to that peculiar class of people who wish to learn the science of physiology for curiosity's sake, and learn it (? to their own satisfaction) by reading one book — usually a tiny one — looking at the illustrations and reading the titles of many others?

Ringworm and Some Other Scalp Affections; Their Cause and Cure. By Haydn Brown, L.R.C.P., etc. Edinburgh and London: J. and A. Churchill.

This well-printed book of 169 pages serves to proclaim its writer's belief that in ringworm, alopecia areata, favus and impetigo, a so-called fungous dyscrasia exists, without which the parasite cannot take root. Very little that is logical is to be found in this production, a constant repetition of the word dyscrasia, with rather sarcastic comments on the prevalent scientific views, being about all that one remembers at the close. Very little support is given to his dyscrasic theory beyond the fact that some people contract ringworm when exposed to it and others do not, just as is the case with every known contagious disease. The author claims to have had unusual success with his method of treatment, which is hygiene and a simple tonic; but no figures are given, no comparisons with other modes of treatment have apparently been essayed, and he always combines his treatment of the "dyscrasia" with some external application.

Venereal Diseases. By EDWARD L. KEYES, M.D., and CHARLES H. CHETWOOD, M.D. New York: William Wood & Co. 1900.

The name of the senior author of this work is a guarantee of the excellence of any publication that bears it, and in choosing Dr. Chetwood as a collaborator he has not impaired the quality by which his own writings have been made notable.

Dr. Keyes has confined his part of the work chiefly to its latter half, which deals with syphilis and chancroid. Of this it is unnecessary to say more than that it deals with these subjects in a concise, practical and lucid manner. Its teachings are, in our judgment, sound throughout, and it is perhaps as good a guide for the young practitioner and student to follow as any in the English language with which we are acquainted.

The first portion of the volume is devoted to the consideration of acute and chronic urethritis, complications and sequelæ, including non-specific as well as specific urethritis, and while retaining the general plan of a former work of Dr. Keyes, has been brought up to date by Dr. Chetwood and contains much new material, conspicuously in the matter of the bacteriological study of urethritis. The various methods of distinguishing the gonococcus from the numerous other forms of diplococci found in the urine and discharges and secretions of the genitals are well set forth in the first chapter. The judicious use of solutions of permanganate of potash and silver nitrate or protargol for urethral irrigations, the first in the acute stage in weak solutions and the two last in the later stages of the disease, are given the first place in the treatment of gonorrhea, but the medicinal and hygienic treatments are not neglected in the chapter dealing with this subject. Both the acute and the chronic forms of gonorrheal urethritis are well presented and illustrated, the various contrivances for irrigation of the urethra and bladder and also some of the endoscopic instruments being acceptably shown by accompanying figures.

That part of the work with which we are least in accord, and which perhaps on this account seems most open to criticism, is that concerned with stricture and its treatment. We do not concur, for instance, in the author's approval, even in its limited application, of the practice of continuous dilatation in cases in which, beginning with a filiform bougie in the surgeon's office, the patient is sent home and told "to keep quietly about the house" for a week or more, during which gradually increasing sizes of instruments are passed, being of the opinion that this treatment should be frankly condemned.

Again, while sharing the author's view, which does not accept the more extreme teachings of Otis, with regard to urethral calibre, we do not find in the substitute proposed in the place of Otis's standard of measurements — namely, the adoption of a slightly smaller size as the normal one — any ground presented for thinking it more correct, and with regard to internal urethrotomy the adoption of the normal meatus — stated, as it seems to us, erroneously as 30 French — for a guide in internal urethrotomy has nothing to recommend it.

The volume is fairly well illustrated and admirably planned in its arrangement, and may be recommended especially, as it seems to us, for students.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, MAY 17, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.

HOSPITAL ENDOWMENT AND HOSPITAL ABUSE.

WITH the gradual but inevitable disappearance of prejudice regarding treatment in hospitals for all classes in the community, it is becoming clear that new possibilities for abuse are more and more imminent. Not many years ago a person of means, ill with an acute disease or suffering from a surgical affection requiring operation, would have considered a long time before entering a hospital, if he could possibly be cared for at home. Now all this has changed; prejudice has been laid aside in great measure, and persons quite free from the implication of poverty are continually seeking admission to our hospitals, confident that there they will receive the most skilled care under the very best surroundings for ultimate benefit. This somewhat anomalous state of affairs has been met by various hospitals in various ways. Probably all hospitals of any considerable size now have so-called private wards, access to which means the payment of a varying sum, and often a large one, into the general hospital treasury, for the supposed privilege of occupying such a private ward or room. In some of the more conservative institutions any added payment for medical services is absolutely discountenanced. The rule is stringent that no physician connected with such a hospital is permitted to accept any fee from a patient while under treatment in the hospital. Other institutions assume the justifiability of charging extra amounts for certain special privileges and also of permitting the attending physician to make his own independent charge for services rendered, this fee to be regulated presumably by his caprice rather than by any standard fixed by the hospital. This has been the entering wedge for the reception of private patients into wards controlled by the physicians of such patients; in other words, a system of special privileges has been accorded men who are usually eminent in their profession, and who likewise hold hospital appointments; the hospital is, therefore, made directly to subserve the private interests of individual physi-

cians. This position of the hospital is by no means universal as yet; on the contrary it is rather exceptional, but it has been adopted by one, at least, of the most influential New York institutions, and there is every reason to suppose that others will follow its example. We have, for example, recently had occasion to note in these columns the details of a bequest to Mt. Sinai Hospital, in which provision is distinctly made for an increase of facilities for treating private contributing patients. The tendency is, in fact, everywhere apparent, and is certainly one to be seriously considered in anticipation of the developments of the future. The question which directly faces us is: Should hospitals, founded and maintained as charitable institutions, be so far diverted from their original uses as to lead to the direct financial benefit of the medical staff? Like many other matters, this is evidently a question which future tendencies in medicine must decide. No aphorism is truer than that "to him who hath shall be given," and in medical practice the application is especially apparent. It is, however, equally certain that the many who are not so favored are likely to raise an increasingly vigorous protest against the injustice of the whole hospital system, if it encourages the well-to do as well as the poor to take advantage of its offices. The small private hospital is, no doubt, a necessary and desirable adjunct to modern practice, particularly of a surgical character, and has no objections on the ground of favoritism, since it permits any reputable physician to treat his patient in its wards. The matter assumes, however, an entirely different aspect when such privileges are extended to the very few to the absolute exclusion of all others, as must clearly be the case in any large hospital, the chief function of which is the wise bestowal of medical charity. A conservatism here is certainly justified, and we should be glad to see a stop put to such tendencies in all of our large institutions. The use of money to advance the interests of individual physicians to the manifest detriment of their colleagues is not consistent with the ethics upon which hospital foundations are made, nor with the spirit of fairness which should prevail among medical men. To add to the advantages which a hospital appointment already gives, the possibility of money rewards is clearly a step fraught with many dangers.

As the President's Address before the Association of American Physicians in 1898, Dr. F. C. Shattuck read a paper on "Some Remarks on Hospital Abuse," in which he drew attention to certain of the facts to which we have alluded. Writing of the admission of well-to-do patients to charity hospitals, he said in part:

"It seems to me that injustice to somebody is inevitable when well-to-do patients are admitted to hospitals designed for the sick poor. If the staff is allowed to receive fees for attendance on such patients, its members are given an unfair advantage over those members of the profession without hospital appointments, and the hospital becomes a sort of medical trust. The indirect benefits of hospital service are quite sufficient. If the members of the staff are not allowed to take fees, the well-to-do patient is injured by receiving gratis services for which he is able to pay and should pay; the time and skill of the attendant is diverted from the sick poor or from such use as he might wish to make of them, and the sum of professional earnings, now none too large, is unfairly diminished. Commercialism tends to degrade the medical profession, and if well-to-do patients are to be cared for in our great hospitals, it seems to me that the evils of free are less than those of paid professional service." Since this was written the tendency which Dr. Shattuck deprecates has grown to ominous proportions, and we may well pause to consider whither it is leading, and the possible consequences it will bring in its train, however discouraging the attempt to check the tendency may be.

THE FILTERING POWER OF THE SOIL AND THE CONVEYANCE OF BACTERIA BY MEANS OF SUBSOIL WATER.

AT the instance of the Town Council of Turin, in conjunction with the waterworks company, a commission was appointed in March and April, 1896, comprising authorities in hygiene, bacteriology, chemistry, engineering and geology, to study and report upon the character of the soil above and on either side of the intake of the filter galleries connected with the waterworks of Valsangone, and Drs. F. Abba, E. Orlandi and A. Rondelli were placed in charge of the bacteriological researches connected with the inquiry.[1]

The principal matters they were called upon to investigate were the nature of the soil and its suitability for filtering purposes, also the extent to which bacteria derived from the upper layers were capable of penetrating into this subsoil, and the effect of surface pollution upon the quality of the water entering the filter galleries. It was obvious that for this purpose it would be necessary to employ pure cultures of some non-pathogenic micro-organism, not of common occurrence in the Turin water supply; one, moreover, of ready and rapid growth in ordinary nutritive media, and capable of easy recognition by some well-marked property, such as the production of coloring matter. Nothing could be more suitable for the purpose than the bacillus prodigiosus, which was used in these tests.

An account also is given of the method of cultivation adopted of the mode of adapting the area of land selected for the experiments, and of preparing and introducing the water impregnated with the cultures. The water employed was in certain cases intensely colored either with methyl eosin or with uranin, which had been found by means of previous tests to have no injurious effects upon the bacteria. A plan is given to explain the relative positions of the experimental area, the filter galleries and the testing-stations. The numerous experiments are set forth in tables, each of

[1] Zeitschrift für Hygiene, vol. xxxi, 1899, p. 66.

which is followed by a statement of the conclusions to which the authors were led in consequence of the same. Thus from the first set of tests it was ascertained that the bacillus prodigiosus penetrated through the soil above the right-hand filter gallery in one and one-quarter hours, while it took seven hours to percolate to the left gallery. Under other conditions the test bacillus took in both cases seven hours to reach the filtering galleries. Again, when colored water tests were employed, the prodigiosus took forty-two hours to attain the gallery, while the coloring matter needed seventy-five hours to traverse the same distance through the same soil. It was further ascertained in connection with these experiments that the test bacillus remained for two months in the soil and was then still capable of further cultivation. It was also present in considerable numbers in the deeper layers of the subsoil. The bacillus prodigiosus, moreover, occurred two years later in the Turin water supply, which would seem to prove that it remained in the soil for an additional period of two years.

The authors, in conclusion, compare the results of their investigations with those of a similar kind undertaken in 1897 by Pfuhl, and claim the priority for their researches.

MEDICAL NOTES.

BILL FOR THE RELIEF OF ACTING ASSISTANT SURGEONS, U. S. A. — We are in receipt of a bill and brief of Senate Bill 4,323, being House of Representatives Bill 11,077, providing for the relief of acting assistant surgeons of the United States Army. Among other provisions the bill provides that acting assistant surgeons are and shall hereafter be entitled to admission to, and to the privileges of other inmates of, the National Home for Disabled Volunteer Soldiers in any of its branches, in like manner and upon the same conditions as all other inmates of said Home.

FIFTIETH ANNIVERSARY OF THE WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA. — Exercises commemorative of the fiftieth anniversary of the Woman's Medical College of Pennsylvania were begun May 16th, in connection with the annual commencement. Dr. Mary Putnam Jacobi addressed the graduating class, and remarks were made by the Chinese minister.

BEQUESTS TO HOSPITALS. — Prof. David Edward Hughes, the physicist, has left the greater part of his estate to four London hospitals, which will receive ultimately between $1,500,000 and $2,000,000. Other bequests were made for various scientific objects.

FIRST INTERNATIONAL CONGRESS OF THE MEDICAL PRESS. — An International Congress of the Medical Press will be held at Paris, on the 26th of July, in connection with the general Exposition.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, May 16, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 100, scarlatina 37, measles 111, typhoid fever 10, small-pox 2.

OFFICERS OF THE NORFOLK DISTRICT MEDICAL SOCIETY. — At the recent meeting of this Society the following officers were elected: President, Dr. F. W. Goss; Vice-President, Dr. C. F. Withington; Secretary and Librarian, Dr. James C. D. Pigeon; Treasurer, Dr. Edward G. Morse; Commissioner of Trials, Dr. W. V. Pierce; Nominating Councillors, Dr. C. A. Cheever, Dr. J. J. Sewall; Censor, Dr. H. M. Cutts; Supervisors, Dr. G. B. Stevens, Dr. C. G. Dewey, Dr. G. H. Francis, Dr. H. R. Hitchcock; Councillors, Dr. H. D. Arnold and twenty-seven others.

NEW RULES FOR ICE DEALERS AND BARBERS. — The Board of Health has recently issued orders to further protect the community against impure ice. The ice companies and dealers will hereafter be required to fill out a blank giving details of the source, kind, method of storing, etc., of all ice sold. The barbers have also come under the notice of the Board, and will hereafter be required to sterilize all implements used, and to dispense entirely with certain accessories, as, for example, powder puffs and sponges.

DEATH OF ABNAHAM PARSONS, THE "BUNTER." — Abraham Parsons, a negro popularly known as the "bunter," because of the use to which he was accustomed to put his head, has recently died at North Adams, Mass. The autopsy revealed a skull one and one-half times as thick as that of an ordinary person. The frontal region was three-fourths of an inch in thickness. He is said to have died of old age, not of any injuries inflicted during his bunting days.

A CENTENARIAN. — Mrs. Sally Baker has recently died at Marshfield, Mass., at the age of one hundred and one years and eleven months. She was the only pensioner of the War of 1812 in this part of the country.

NEW MEDICAL SCHOOL BUILDING FOR YALE. — The Yale University authorities are now likely to purchase land for a new medical school, adjacent to the New Haven Hospital, at an estimated cost of about $75,000.

REAPPOINTMENT OF Dr. H. P. WALCOTT. — Dr. H. P. Walcott, of Boston, has been reappointed a member of the State Board of Health. He has been officially connected with the Board for twenty years.

A CASE OF SMALL-POX IN PORTLAND, MAINE. — A case, for a time simulating measles, and later considered small-pox, has been reported from Portland, Me. Quarantine precautions have been taken.

A SALEM SCHOOL CLOSED. — The Board of Health of Salem has closed the Pickman School in North Salem, in order that it may be disinfected, because of the prevalence of diphtheria.

NEW YORK.

MISSIONARIES AND MEDICINE. — Dr. D. B. St. John Roosa, of New York, presided at a meeting of

the Ecumenical Missionary Conference on May 1st. One of the speakers was Dr. Robert Beebe, of Nankin, President of the Medical Missionary Society of China, who in discussing the question as to whether, when medical work is projected, it should be done by means of hospitals or dispensaries, or both, advocated the establishment of both a hospital and dispensary simultaneously, wherever this is practicable. On account of the large amount of work falling upon the physicians of mission hospitals it is necessary to have native assistants, and it is also very desirable to have at least one trained nurse for every such institution, especially for the purpose of training native women as helpers in the wards. Dr. John Cross, of Amoy, China, was very emphatic in his condemnation of quackery in mission work: "Medical quacks in China," said he, "consisting of missionaries who have very little or perhaps no training at all and finding their work somewhat unproductive and unattractive, take to distributing quinine, pouring oil on sores with hen's feathers, and pray over those they are helping to die, must be an abomination to God. I emphatically do not believe in half doctors, and I do not think you are wise in subscribing one cent that pretends to produce such. What China needs to-day is an army of well-equipped, liberally supported, unsectarian surgeons. It is not with the point of the bayonet but with the point of the lancet that we are to Christianize China." Dr. William H. Thomson, of New York, also thought that the training received should be the best that can be obtained, and said he had no patience with any system that would make it easier for a man to become a medical missionary than to become a practitioner in this country.

Missionaries and Leprosy.— At another meeting held on the same day the work among Oriental lepers was related in a paper by Wellesley C. Bailey, Secretary and Superintendent of the Mission to Lepers in India and the East. There were, he said, fully one million and a half of these unfortunate creatures, whose condition, notwithstanding all that has been done for them, is scarcely less terrible than in the most barbarous ages of the world's history. Only a few months ago a missionary reported the burning alive of a number of lepers in Sumatra, and all through the East the piteous cases of the victims of this disease are the very quintessence of human misery. Having given some account of the relief work by missions among lepers since the beginning of the century, he spoke of that by his own society, which was organized in 1874 and is now operating 56 centres in India, Burmah, Ceylon, China and Japan, while it has in contemplation an extension of its work into Korea and Sumatra. It has 24 asylums or homes for lepers and 14 homes for untainted children of lepers, and it aids 15 other institutions. A Christian leper asylum, he said, is a sermon in itself, which has a wonderful effect upon the surrounding heathen.

Tenement House Commission. — The Governor is to be congratulated on the excellent selection he has made for members of the new Tenement House Commission. In order to get all the different sides of the problem involved properly considered, he wisely deemed a large commission advisable, and therefore made it to consist of fifteen. It contains physicians, architects, builders, lawyers who have paid special attention to the questions concerned, and representatives of both the tenants of tenement houses and the owners of reformed tenement houses who have managed to make such buildings remunerative. Among the members of the Commission are Dr. George B. Fowler, President of the Medical Society of the County of New York, who served as a Commissioner of the Board of Health at the time when Governor Roosevelt, as President of Police Department, was also a member of the Board; Dr. E. R. L. Gould, President of the Suburban Homes Company; Hugh Bonner, Ex-Chief of the Fire Department of New York City; James B. Reynolds. head worker of the New York University Settlement; Alfred T. White, President of the Brooklyn Bureau of Charities, and Robert W. De Forest, President of the New York Charity Organization Society. At the first meeting of the Commission, which was held on April 20th, Mr. De Forest was elected chairman.

A Miscarriage of Justice. — Justice Hatch, of the Appellate Division of the Supreme Court, on May 11th rendered a decision, concurred in by all his fellow-justices, setting aside the verdict of six cents damages, awarded to Charles B. Morris against the Metropolitan Street Railway Company for the death of his son. Young Morris, in December, 1898, received fatal injuries from the collision of the brougham in which he was riding with a trolley car, and his father, as administrator, sued the railway company for $25,000 damages. The case was tried before Justice McAdam in the Supreme Court in June, 1899, and the foreman of the jury afterward explained to the plaintiff's attorney that so small a sum was given because the father was rich and the verdict carried the costs, amounting to $134. Justice McAdam denied a motion for a new trial, and an appeal was taken to the Appellate Division. Justice Hatch, in his opinion, argued that the jury failed fairly to comprehend the elements of damage which the case necessarily presented, and that they erred in awarding nominal damages. The case is now to be retried in the Supreme Court.

Training Schools for Nurses. — The Society of Superintendents of Training Schools for Nurses, a body of more than 300 women representing the largest hospitals in the country, held a three days' meeting in New York, on April 30th and May 1st and 2d. Among the subjects discussed were the extension of the course of training from two years to three (a measure that has already been adopted in 50 hospitals), and the practicability of giving up the monthly stipend to pupil nurses. In lieu of this it was proposed to furnish the latter with uniforms and text-books (expenses which the salary was designed to meet), a plan which would result in a considerable

saving of money, which might be used for enlarging the work of the schools, etc. The following resolution in regard to the Army Nursing Bill, which failed to pass in the United States Senate by one vote, was unanimously adopted: *Resolved*, That this Society strongly indorses the principles set forth in the Army Nursing Bill recently brought before Congress, and pledges itself to use every effort to further the objects therein set forth.

PRESENTATION TO DR. JACOBI. — On Sunday, May 6th, Dr. Jacobi was presented with a silver tankard, on which was engraved an inscription reading: "To Dr. Abraham Jacobi, on the seventieth anniversary of his birthday, from the Mount Sinai Hospital, in grateful recognition of forty years of devotion and fidelity, May 6, 1900." The ceremony took place at Mount Sinai, in the presence of the Medical Board and the Managers, and the presentation address was made by Isaac Wallach, President of the Board of Managers. The tankard is nearly two feet high, and is decorated with the figure of a child touching the rod of Esculapius, and other designs emblematic of Dr. Jacobi's life work in the field of diseases of children.

MEETING OF THE TENEMENT HOUSE COMMISSION. — At a meeting of the Tenement House Commission recently appointed by the Governor, held April 26th, Laurence Vieller, the Secretary of the Tenement House Committee of the Charity Organization Committee, was elected Secretary of the Commission, and it was decided that the members of the Commission should begin a series of personal inspection tours through the tenement districts on May 2d.

GIFTS TO ST. JOHN'S GUILD. — Mrs. Augustus Juillard, who last year presented a complete new floating hospital to St. John's Guild, has now contributed $50,000, the interest on which is to be used to defray the expenses of operating the boat. Mrs. Frederic E. Lewis, in memory of a deceased son, has arranged for the erection, at a cost of $10,000, of a new cottage hospital on the Guild's grounds.

SEVENTIETH ANNIVERSARY, COLLEGE OF PHARMACY. — The seventieth annual commencement of the New York College of Pharmacy was held at Carnegie Hall on May 2d, when there were 105 graduates, including seven women. The valedictorian of the class was Miss Frances Blair, of the Borough of Richmond.

THE TUBERCULOSIS HOSPITAL VETOED. — Mayor Van Wyck has seen fit to veto the bill passed by the Legislature providing for a tuberculosis hospital for New York City. It is somewhat difficult to understand just why he should have done this, as there was apparently no opposition to the measure.

APPOINTMENTS. — At the annual meeting of the State Board of Health, held at Albany, May 11th, Dr. Daniel Lewis, of New York City, was re-elected president. A commission on tuberculosis was appointed, and also a committee to report on the best system of refuse disposal plants.

TENEMENT HOUSES. — In order to become familiar with the problems which they are to endeavor to solve as far as may be found practicable, the new Tenement House Commission is now making a series of personal inspection tours through the tenement districts of the city.

Miscellany.

MEASUREMENTS OF BOSTON SCHOOL CHILDREN.

The following extracts from the records of the School Committee meeting, April 24, 1900, will be of interest to those interested in physical education: "Mr. Calderwood, for the Committee on Hygiene and Physical Training, to whom was referred, February 27th, a communication from the Boston Society for the Advancement of Physical Education, requesting permission to make a series of measurements of the height and weight of the Boston school children, beginning with the primary grades and continuing through the period of growth, reported that they have granted a hearing to representatives of the Society, and have very carefully considered the matter. Your committee fully agree with the statement that observations of this sort on the same individual at successive periods would be of great practical value from an educational as well as a physiological standpoint, and welcome the advice and co-operation of the Boston Society for the Advancement of Physical Education, which they are assured will be willingly rendered, with respect to the manner in which the plan should be carried into effect, and in the arrangement and study of the facts to be collated, but feel that the actual measurements should be made under their own supervision by the Director of Physical Training, who is directly responsible to this board. Furthermore, as the value of observations of the nature under consideration will depend upon their continuance during a series of years, in a systematic and definite manner, your committee recommend the adoption of an amendment to the rules, the passage of which will be sufficient to ensure the successful carrying out of suggestions made by the memorialists."

MR. TREVES'S ESTIMATE OF WOMEN AT THE SEAT OF WAR.

AT a dinner given by the Reform Club to Sir William MacCormac and Mr. Frederick Treves, recently returned from the South African War, Mr. Treves is reported in the *British Medical Journal* as saying, among other things: "So far as the sick were concerned there were two plagues in South Africa — the plague of flies and the plague of women. The flies could be got rid of by means of horsehair wisps, gauze and other appliances, and the flies disappeared at night. But the women mentioned in Sir Alfred Milner's proclamation were absolutely a terror. They came out in the guise of amateur nurses, having exhausted every other form of excitement; they took up the time of the officers, and, in fact, had the camp to themselves. Considering the kind of war in which we

were engaged and the number of lives lost, the picture of a number of elaborately-dressed ladies masquerading in summer toilets and arranging picnics about Capetown was a blot on the campaign."

Obituary.

LANDON CARTER GRAY, M.D.

DR. LANDON CARTER GRAY, the eminent neurologist, died at his home in New York on May 8th, from Bright's disease. He was of an old Virginian family, and was born in 1850. He entered Columbia, but, on account of ill health, was not able to complete his collegiate education. Later, however, he received the degree of A. M. from Columbia. He studied for a considerable time in Germany, and in 1873 was graduated from Bellevue Hospital Medical College. For a number of years he practised in Brooklyn, devoting himself more and more to neurological work, and afterwards removed to New York, where he was soon in much demand as a consultant and as an expert in the courts. In addition to numerous monographs, he wrote a general text-book on diseases of the nervous system which is greatly esteemed. At different times he was President of the New York County Medical Society, the Society of Medical Jurisprudence, the New York Neurological Society, and the American Neurological Association, and he was also one of the charter members of the Medical Association of the greater City of New York, incorporated in 1899.

Correspondence.

DEATH IN THE DENTAL CHAIR.

DOVER, N. H., April 27, 1900.

MR. EDITOR: — On April 25, 1900, Mrs. E. P., of Dover, N. H., American, age thirty-two, in apparent good health, entered a dental office for the purpose of having a tooth extracted.

The operator injected the gum at two points on the palatal side and at one point on the labial side of the tooth, with "thymene." He then extracted the tooth and for five minutes afterwards the patient conversed with him; she then began to complain of a "queer feeling" in the head and commenced to rub it vigorously; a few minutes later she had a sighing respiration which was soon followed by convulsive movements of the arms, and in ten minutes after the extraction of the tooth she was in a state of coma.

At this point two physicians who were near were called, and found the respiration had ceased, but that the heart's action was still good; the pupils were contracted to a mere point, but before death they relaxed irregularly. Artificial respiration was established, atropine was injected subcutaneously, and other remedies were used, but the heart beat became weaker and weaker and death ensued in about thirty minutes after the "thymene" was injected.

I saw the body fifteen minutes after death, and found the face, ears, neck, fingers and surface of the body were deeply cyanotic. I drew off the urine with the catheter and on testing it found it to be heavily loaded with albumin; heat and nitric acid rendered it so solid that it would not flow out of the inverted test tube. An autopsy showed cirrhotic kidneys, less than one-half natural size, and hypertrophy of left ventricle of the heart, with deficient mitral valve.

This woman, with the exception of slight dyspeptic attacks, considered herself well, her family shared this opinion with her, and she was doing the work of her household on a farm.

"Thymene" is a proprietary article made by the "Thymene Mfg. Co.," 232 Tremont Street, Boston, Mass., and while the constituents are not divulged to the dental profession, is said to contain three-quarters of one per cent. of eucaine in an alkaline solution.

Another fact has come to my knowledge, namely, each bottle of "thymene" has a copy of a certificate from H. L. Bowker, State Assayer of Massachusetts, dated June 13, 1894, in which he says the mixture thymene "contains no cocaine or chloral hydrate, and is free from poisonous or injurious substances."

As I understand the matter, eucaine was not brought to the notice of the medical profession till the summer of 1896; but I have a letter from the Thymene Mfg. Co., in which they state that thymene "*depends for its anesthetic properties on eucaine in three-fourths of one per cent. in an alkaline solution.*"

If I am correctly informed as to the discovery or introduction of eucaine in 1896, what shall be said of the honesty of a firm that puts on this mixture the certificate of analysis from the State Assayer dated June 13, 1894?

If I am correctly informed there could have been NO eucaine in the thymene analyzed June 13, 1894, the makers seem to have substituted a deadly drug since 1896 and to be dishonestly using the old certificate of analysis.

Yours truly, JOHN R. HAM, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MAY 5, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Diphtheria and croup.	Measles.
New York	3,654,594	1514	516	17.46	20.34	.78	2.16	1.92
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,532	—	—	—	—	—	—	—
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	209	57	19.56	16.80	—	2.40	2.40
Baltimore	506,389	183	65	17.05	21.55	1.10	2 20	.55
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	107	34	11.16	22.32	—	1.86	—
Washington	277,000	114	26	22.00	14.96	.88	4.40	1.76
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	74	36	16.20	32.40	—	2.70	—
Nashville	87,754	—	—	—	—	—	—	—
Charleston	66,165	28	9	17.85	10.71	7.14	—	—
Worcester	111,732	34	16	26.46	14.70	—	5.88	—
Fall River	103,142	—	—	—	—	—	—	—
Cambridge	92,820	25	6	28.00	16.00	—	—	—
Lowell	90,114	38	5	7.89	20.04	2.63	—	—
New Bedford	70,511	20	5	10.00	15.00	—	—	—
Lynn	68,218	15	4	6.66	13.33	—	—	—
Somerville	64,394	20	5	30.00	25.00	—	10.00	—
Lawrence	59,072	24	9	16.66	16.66	—	—	4.16
Springfield	58,266	30	7	20.00	29.99	—	3.33	—
Holyoke	44,510	—	—	—	—	—	—	—
Brockton	38,750	—	—	—	—	—	—	—
Salem	37,723	13	4	7.69	—	—	—	—
Malden	36,421	11	5	9.09	9.09	—	—	—
Chelsea	34,235	14	5	7.14	—	—	—	—
Haverhill	32,651	15	2	13 33	13.33	—	—	—
Gloucester	31,428	5	—	—	—	—	—	—
Fitchburg	30,523	8	3	—	37.50	—	—	—
Newton	30,461	9	3	11.11	11.11	—	—	—
Taunton	28,527	9	—	11.11	11.11	—	—	—
Everett	28,102	2	2	—	—	—	—	—
Quincy	24,578	6	1	50.00	—	—	—	—
Pittsfield	23,421	—	—	—	—	—	—	—
Waltham	22,791	8	1	—	12.50	—	—	—
North Adams	21,583	12	4	16.66	25.00	—	—	—
Chicopee	18,316	10	3	20.00	—	10.00	—	—
Medford	17,190	2	1	—	—	—	—	—
Newburyport	15,636	5	2	20.00	20.00	—	—	—
Melrose	14,721	3	2	33.33	33.33	—	—	—

Deaths reported 2,574; under five years of age 828; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 491, acute lung diseases 526, consumption 270, diphtheria and croup 61, measles 43, whooping-cough 25, diarrheal diseases 24, scarlet fever 22, typhoid fever 19, erysipelas 17, cerebrospinal meningitis 10.

From whooping-cough New York 15, Boston 4, Pittsburg 2,

Baltimore, Providence, Cambridge and Salem 1 each. From scarlet fever New York 13, Boston 6, Pittsburg, Worcester and Melrose 1 each. From typhoid fever Pittsburg 11, New York, Boston and Baltimore 2 each, Newton and Taunton 1 each. From erysipelas New York 12, Boston and Baltimore 2 each, Springfield 1. From cerebrospinal meningitis New York 4, Boston 3, Baltimore 2, Worcester 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending April 21st, the death-rate was 20.3. Deaths reported 4,509: acute diseases of the respiratory organs (London) 411, measles 168, whooping-cough 132, diphtheria 54, diarrhea 44, scarlet fever 34, fever 34, small-pox (Liverpool 4, London and Cardiff 1 each) 6.

The death-rates ranged from 12.9 in Birkenhead to 30.8 in Wolverhampton: Birmingham 23.6, Bradford 20.4, Cardiff 20.4, Gateshead 20.0, Hull 17.3, Leeds 23.2, Liverpool 26.0, London 19.6, Manchester 26.1, Newcastle-on-Tyne 14.0, Nottingham 18.0, Portsmouth 24.5, Salford 21.7, Sheffield 22.2, Swansea 16.3, West Ham 15.6.

METEOROLOGICAL RECORD

For the week ending May 5th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		Weather. *		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S...29	29.96	74	69	38	56	36	46	W.	N.W.	8	6	C.	C.	.01
M...30	29.73	66	81	50	44	82	63	W.	W.	8	17	C.	O.	.03
T...1	29.83	55	64	46	57	36	46	N W.	W.	24	9	C.	C.	
W...2	29.97	58	71	45	70	80	75	S.E.	S.	10	12	O.	C.	
T...3	29.51	54	60	49	97	86	92	E.	S.	15	7	R.	O.	2.40
F...4	29.81	50	56	44	72	50	61	W.	W.	22	7	O.	C.	.06
S...5	29.97	50	54	45	68	49	58	W.	W.	21	10	C.	C.	
☞														

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☞ Mean for week.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MAY 12, 1900.

G. P. LUMSDEN, surgeon, ordered to the "Kentucky," May 15, 1900.

G. F. FREEMAN, assistant surgeon, detached from the Naval Hospital, Washington, D. C., May 10th, and ordered to the "Essex."

C. H. DELANCY, assistant surgeon, detached from the "Essex," when relieved and ordered to the Naval Hospital, Washington, D. C.

S. C. EVANS, passed assistant surgeon, ordered to the "Kentucky," May 15, 1900.

W. C. BRAISTED, passed assistant surgeon, detached from the "Detroit," when put out of commission, and ordered home and to be ready for orders to sea.

CORRECTION.

It was stated in our issue of May 10th that Dr. J. C. White is an honorary member of the French Dermatological Society. This, we learn, is an error.

SOCIETY NOTICE.

VERMONT SCHOOL OF INSTRUCTION FOR HEALTH OFFICERS. — The second annual meeting will be held at Burlington, Vt., May 22 to 24, 1900, inclusive. An attendance of over two hundred is expected, an increase over last year.

STATE BOARDS OF MEDICAL EXAMINERS, STATE LIBRARY, CONCORD, N. H.

NOTICE TO PHYSICIANS.

The seventh examination for licenses to practise medicine in the State of New Hampshire will be held at the State House, Concord, on Tuesday and Wednesday, June 19 and 20, 1900, beginning at 8 o'clock A. M.

All physicians who were not in practice in this State on and before March 16, 1897, must pass the examinations in order to receive a license to practise legally their profession.

Application blanks should be procured early, as these papers must be filled out and in the hands of the Regent by June 15th.

All information regarding the coming examinations will be cheerfully given by the Department of Public Instruction, State Library, Concord.

CHANNING FOLSOM, *Regent*.

BUREAU OF INFORMATION.

The Directors of Philadelphia Co. Medical Society, aware of the large number of physicians who will pass through Philadelphia on their way to and from the meeting of the American Medical Association to be held at Atlantic City, N. J., June 5th to 8th, will establish a Bureau of Information which will be located at the College of Physicians of Philadelphia, northeast corner of 13th and Locust Streets. It will be in charge of a competent physician and will be open from 10 A.M. until 5 P. M.

RECENT DEATHS.

JOHN RICHARDSON BRONSON, M.D., M.M.S.S., died in Attleboro, May 9, 1900.

GEORGE WASHINGTON WARREN, M.D., M.M.S.S., died in West Boylston, April 22, 1900, aged eighty-one years.

CHARLES H. MERSEREAU, M.D., of New York, died on May 2d, from cardiac disease. He was thirty-seven years of age, and was graduated from the College of Physicians and Surgeons, New York, in 1884. For two years he was house surgeon in the Hartford Hospital and later he served for several years as a sanitary inspector of the New York Health Department.

MATTHEW M. BAGG, M.D., a prominent physician of Utica, died on May 3d, at the age of eighty-three. He was an original member of the New York State Medical Association. He was also one of the founders of the Oneida Historical Society and a local historian of considerable repute.

BOOKS AND PAMPHLETS RECEIVED.

Bulletin No. 1, Issued by Vermont State Board of Health, March, 1900.

Experimentelles und Klinisches über Orthoform. Von Dr. August Luxenburger.

Forty-fourth Annual Announcement, Portland School for Medical Instruction, 1900.

Report of a Case of Fibroma of the Neck. By J. A. Sutcliffe, A.M., M.D. Reprint. 1900.

Section of Medico-Legal Surgery, Medico-Legal Society, Annual Report, January 1, 1900.

Manuel Complet de Gynécologie. Par A. Lutand. Nouvellet edition. Paris: A. Maloine. 1900.

Economical Disposal of Sewage with Purification by Small Communities. By Robert Fletcher, Ph.D.

Annual Report of the Board of Health of the City of Worcester for the Year ending November 30, 1899.

Deutsche Stimmen aus Deutschen Ländern. Gesammelt von Frau Prof. Dr. J. H. W. Stuckenberg, North Cambridge, Mass.

I. Beitrag zur Aetiologie der Geschwülste. II. Beitrag zur Kenntnis der Syphilis-Aetiologie. Von Prof. Dr. Max Schüller in Berlin.

Goiter: Anatomy of the Thyroid Gland; Pathology and Treatment of Goiter. By Frederick C. Schaefer, M.D., Chicago. Reprint. 1899.

Some Benefits of Vivisection or Experiments on Living Animals. By E. Stuver, M.Sc., M.D., Ph.D., Fort Collins, Col. Reprint. 1900.

"Festschrift" in Honor of Abraham Jacobi, M.D., LL.D., to Commemorate the Seventieth Anniversary of his Birth, May 6, 1900. New York. 1900.

A New Method of Diagnosis of Tuberculosis of the Kidney. By Charles P. Noble, M.D., and W. Wayne Babcock, M.D., Philadelphia. Reprint. 1899.

The Pathology and Surgical Treatment of Tumors. By N. Senn, M.D., Ph.D., LL.D. Second edition, revised. Illustrated. Philadelphia: W. B. Saunders. 1900.

An Account of the Inauguration Ceremony of the Hall of Literature, Science and Hygiene. Performed by the Right Rev. James Macarthur, D.D., Lord Bishop of Bombay. Bombay. 1900.

Twenty-second Annual Report of the State Board of Health of the State of Connecticut, with the Registration Report for 1898, relating to Births, Marriages, Deaths and Divorces. New Haven. 1900.

Diseases of the Gall Bladder and Bile Ducts, including Gall Stones. By A. W. Mayo Robson, F.R.C.S., assisted by Farquhar Macrae, M.B., C.M. Second edition. New York: William Wood & Co. 1900.

Address.

SOME THOUGHTS ON MEDICAL EDUCATION.[1]

BY FREDERICK C. SHATTUCK, M.D., BOSTON.

Mr. Dean, Members of the Graduating Class in Medicine of Washington University, Ladies and Gentlemen: — What evil microbe or subtle toxin upset the balance between heart and head for which my old friend, your dean, is noted I know not; but his heart did get the better of his head some two months ago, when he did me the honor to invite me to address you on this occasion. If haply in any small measure your kindness may think this selection justified, I want the credit and beg that you charge off against him all my shortcomings. He graciously left the choice of a subject to me, and, in view of the active fermentation now at work in medical teaching and its methods, I venture to lay before you some thoughts on medical education.

Is medical education making reasonable progress in this country? What are its lines of progress? What can we do to encourage and foster healthy growth? These are questions which every physician who cares for his profession must ask himself from time to time, and which constantly rise unbidden in the minds of those whose privilege it is to be connected with a teaching body. You, gentlemen of the graduating class in medicine of Washington University, have doubtless thought a good deal on these questions or some of them from the point of view of the student, anxious to acquire the best possible equipment for his life work. Your point of view is about to change somewhat, and to enlarge much with time, as you get into practice and become teachers yourselves, as doubtless some of you will. In no way does one learn so much one's self as in trying to teach others. Nothing so clarifies one's knowledge and defines its limitations as the necessity for accurate and terse statement. These advantages accrue especially to the young teacher. The older man crystallizes more slowly and defers anchylosis of his brain cells by contact with younger minds, by the influence of their enthusiasm and by the greater incentive for keeping abreast of the times afforded by the demands of the teaching position. In the history of your own school there is no lack of inspiring examples.

But to return to our first question: Is medical education making reasonable progress in this country? The adjective "reasonable," I employ advisedly, because the question before us is not an abstract one. Its answer implies a consideration of our circumstances, of the conditions which obtain in this country and under which we must work. Some of these conditions are adverse; some the opposite. All must be kept in mind when we compare medical education in this with that of other countries.

On the European Continent are ancient civilizations, centuries old civic aggregation and organization, centralized paternal, and relatively despotic, government. The influence and power of the State is all-pervasive. It protects and watches over the higher as well as the lower education. In France, indeed, the clergy of all denominations are paid by the State.

The hospital is primarily an outgrowth of city life. Rural districts are not only sparsely inhabited, but the people know one another and one another's needs and afford the help needed in the degree needed in time of illness. In a city there is not the same community of interests that there is in the country. The very poor are in larger numbers and are very inadequately known to one another or to their more prosperous neighbors. Hospitals, therefore, in old cities were founded long ago mainly by religious orders, and were ready to the hand of the university as soon as it was realized that clinical instruction must form a part of medical teaching. The State took over the hospitals and the universities, of the medical faculties of which the hospitals became practically an integral part. The universities have the ear of the State and demand laboratories with the means for maintaining them. Circumstances, centralization and the German character have thus put Germany in the forefront of scientific medical research. Back of the higher education is the public purse; back of that is a highly trained and intelligent bureaucracy. Results are hence prompt and striking.

In Great Britain we have, as on the Continent, ancient cities with an aggregation of the sick poor, the indispensable condition for hospital formation and growth. But this is the only common factor. The English theory of government is that of minimum interference with private action. Hospitals were provided and are now maintained almost exclusively by private benevolence, and the higher education is, under the English theory, only indirectly fostered, but in no way ruled or supported by the State. The medical school is thus the direct outgrowth and an integral part of the hospital. The part played by Oxford and Cambridge in medical education has been trifling, mainly because they are situated in small towns so near London that they could not compete with the clinical facilities afforded by the great metropolitan hospitals. We now see signs of awakening of medical interest in these old universities, especially in Cambridge, a result, doubtless, of the growth of the laboratory side of medical progress. The degree of Doctor of Medicine is still a purely university title in England, is taken by very few medical men, and carries with it no license to practise. The avenue to practice is through the examining boards of Apothecaries' Hall, the Royal College of Physicians and the Royal College of Surgeons, before one or more of which come the young men who have received their training at Guy's, St. Thomas's, St. Batholomew's, St. Mary's, the London *Hospital* Medical School. We note that the hospital gives the name to the school, and that the medical school is entirely independent of the university — a notable contrast to Continental conditions.

The absolute unity of the hospital and school makes it possible to exact that every student must serve his term as dresser in the surgical, and clinical clerk in the medical, wards, coming thus, while still a student, into intimate touch with the sick, training his senses and his hands, and actually employing himself the methods of investigation and diagnosis which have been described to him. Among the disadvantages of the English method may be mentioned the scattering of first-rate teachers among a multiplicity of teaching bodies, as contrasted with the opportunity for grouping them afforded by the Continental system. Again, the lack of university connection has distinctly lowered the dignity of the medical profession and would seem to

[1] Delivered in St. Louis, April 26, before the Graduating Class in Medicine of Washington University.

be partly responsible for the widely different social rank accorded to the clergyman or to the barrister, and to the doctor. Until very recent times the practice of medicine was not regarded as a proper career for a "gentleman" in England. To become a wine merchant was less lowering. Thirdly, the increasing necessity for laboratories for teaching as well as for research must complicate the work of the London schools, which have at present little money and less land available for the purpose. It would lead us too far to consider the Edinburgh and Dublin schools and their points of difference from the London schools; but in passing I cannot help alluding to the extramural school in Edinburgh, the stimulus it affords to the professors in the university, and the chance of selection which it gives when a chair in the university is vacant. Training may do as much for a teacher as for a student.

Having thus briefly and imperfectly sketched the growth of medical education in Europe and England and contrasted them, permit me to turn to our own country. With us the growth of large cities and the enormous immigration on which it is partly dependent is, roughly speaking, a matter of fifty years. Even in the centres of population before this time, there was relative uniformity of race as well as of fortune. The number of poor who could not get along at home with neighborly aid in illness was small, while anesthesia and cleanly surgery had not infinitely extended the bounds of medical activity. Tartar emetic, calomel and opium could be given heroically at home, where also the lancet could be plied. Before and for some time after the Revolution a real medical education was not to be had in this country. Clinical and practical knowledge were gained by watching and assisting in the work of a busy practitioner; while the foundations of medicine and its principles were derived from the few months' course of lectures delivered by a few men who associated themselves into a so-called medical school, practically purely proprietary in character. The Harvard School is now in its one hundred and seventeenth year, but started with three professors, and did not become really a department of Harvard University until 1872. Up to this time the university merely conferred the degrees on those recommended by a self-appointed medical faculty, which collected the fees from the students, paid its running expenses and divided the balance, if there was any. Your own school was founded in 1841, and in 1891 formed its university connection. In an enormous, undeveloped and, even in its older parts, thinly settled country, the medical school preceded the hospital. The two then grew up entirely independent of one another, instead of being indissolubly connected, as in Europe and England. We inherited the English theory of the minimum interference of government, and, like the English, our medical schools were not parts of the universities, but, unlike the English, our schools had no or but very scanty clinical facilities. A hospital and a university both have continuity of life and afford a guarantee of permanent unselfish benevolence to which a proprietary medical school can lay no claim. There is but small temptation to the successful layman who wishes to return to the public a portion of the wealth which the laws and institutions of the country have aided his own efforts and abilities to acquire; to such there is small temptation to bestow either his surplus money or energy on private enterprises such as our medical schools have been until recently.

As hospitals were founded, grew and multiplied, the schools were not slow to form such connection with them as they could, and the clinical lecture appeared, the thin edge of the wedge in the dislodgment of the didactic lecture. Among the motives for the establishment of hospitals, the overshadowing one was the alleviation of suffering, the care of the sick poor of the neighborhood. The teaching function of the hospital, which even many laymen to-day realize as on a par with its curing function, was but dimly felt. In order to unite the medical profession of the town and enlist the general interest of the community, the broken service came about and has persisted to the present day. Many a busy practitioner is glad to have hospital wards two to four months in a year, and so fascinating is the work he may be led to hold on to his service even after it has ceased to be of any direct advantage to him. To the clinical teacher wards are a necessity; hence, a school in filling a clinical chair must consider not simply the qualities of the candidate, but his dowry, *les beaux yeux de sa cassette*, as the French say. It may be necessary to pass over the young, enthusiastic, and, in the long run, superior man for the inferior man who has the command of indispensable material. The teaching body rarely has any say as to appointments on the hospital staff, among whose qualifications for the position an interest in and capacity for medical education are seldom considered. Influence may count for more than merit in these appointments. To meet the demands for clinical material and to control its use, some schools set up outdoor clinics of their own; a few schools own hospitals with beds. Whether such hospitals command the full confidence of the community and receive support and endowment from it depends much upon their mode of management. Doctors are proverbially poor business men, and a strong and active body of lay trustees to manage the funds and to administer the hospital is generally felt to be necessary. A modern hospital of any size is so expensive that it is nearly impossible for a school to run it without much outside aid, and this aid is not likely to be afforded unless the school has close university connection. In a teaching hospital the teaching body requires initiative and virtual control in two points alone: appointment to the staff and regulation of the term of service. There are other points in which the lay trustees will frequently want the advice of the professional body, but the main responsibility should rest on the trustees. This seems much to ask; but experience shows that those who are willing and competent to assume it are not lacking. The Johns Hopkins Medical School occupies a seemingly ideal and unique position in this country. The University, the Medical School and the hospital have just the right relation to each other. The best citizens are ready to do their full duty as trustees of the University and of the hospital, the two boards working in harmony. The professors of medicine and surgery are the physician and surgeon in chief of the hospital. Each of the other great departments of medicine has a single head with full responsibility. The size of the original endowment, the freedom from traditions and makeshift expedients which have grown up about and may hamper an old institution of slow growth, and the wide discretion allowed a judiciously selected board

of trustees who have amply justified their selection, made the result possible. The influence on medical education which the Johns Hopkins has exerted is already notable though so recent.

We thus see that the independent growth of the hospital and the medical school and the lack of close affiliation of medical school and university have retarded progress in the past. But we see, especially within the past twenty years or so, one school after another getting under the wings of a university, where alone is salvation to be found. We see the gradual extension of the graded course lasting eight or nine months in the year, an increase in the duration of the course from two to three and then to four years, the gain of clinical on didactic teaching, the diffusion of the idea throughout the general community that no large hospital can keep in the front rank if it excludes teaching from its wards, an increasing disposition on the part of rich men to give to medical objects. These are all most encouraging signs of the times and, as it seems to me, allow an unhesitating affirmative answer to the question: Is medical education making reasonable progress in this country? We cannot go so fast under our system and theory of government as can a country with a more centralized government. But we Americans modestly believe that the best is none too good for us, we are quick-witted, not afraid of innovation, and our wealth increases enormously, much of it being in the hands of men who recognize their stewardship. I am no admirer of spreadeagleism; but I am firmly convinced that we shall go far, as far or farther than countries now ahead of us in the scientific race. And I believe that our slower progress is and will be amply compensated for by the education which comes from doing for ourselves instead of being passively done for. In a democratic country like ours, with almost unlimited opportunities for the amassing of wealth, it seems to me of the last importance that every public outlet for such wealth should be widely opened. It seems to me a much healthier state of affairs that we should each and all, in our several spheres and in proportion to our power, feel the direct responsibility for providing, maintaining and constantly improving the higher education, and for promoting the general well-being of the community, than that we should rely on even a government which we choose ourselves to do those things for us. A wise and public-spirited use of wealth best inhibits the growth of the noxious germs of envy and jealousy arising from inequality in wealth. Inequality in opportunity is probably less in this than in any country.

The second question is: What are the lines of future progress and how are we to encourage and foster healthy growth? Some points bearing on this question have been indicated or dwelt upon already. The problem which confronts most of us is not that which confronted the first trustees of the John Hopkins. We must take things as we find them and be content gradually to struggle towards an ideal more or less clearly defined in our own minds. *Ohne Hast ohne Rast* is a good motto. Place and circumstance do not alter the main features of the ideal medical school, though they must be reckoned with in details. We must often be satisfied with contributing towards the attainment of our ideal, much as we should like ourselves to see it in full operation. Moreover, our ideal is apt to change with progress, as the nearer and lower hides the more distant and higher mountain peak.

The main requisites for a modern medical school in this country are university connection; the control of sufficient clinical material in hospitals; scientific laboratories, each under the charge of a competent head undistracted by the demands of private practice, and a corps of enthusiastic teachers who care more for the work than for its immediate money return. University connection and a body of competent and devoted teachers in the so-called practical branches are comparatively easy to secure in the larger and older centres of population. In these centres clinical material is generally ample, more ample, unfortunately, than it is available, for reasons already indicated. Very few schools in this country can call an inspiring teacher in any clinical branch from another school and give him such facilities for his work as he absolutely needs. The lack of hospital control may thus tie hands which but for that were free. Too exclusive dependence on home talent involves the dangers of narrowness of view and of complacent inertia. In a sense we are worse off than were our predecessors of a half century ago, when the lecture term was short and a course of lectures with a charter constituted a medical school. A brilliant lecturer could travel about and give several courses of lectures in different places in the same year. We see the remains of this to-day in the Dartmouth School, for instance. Here a summer course gives the chance to round out medical teaching by city specialists, as would otherwise be impossible in a small country and essentially university town. But the light is unquestionably breaking. We see the continuous service appearing here and there, not only in newly established, but even in the older hospitals. We see a greater recognition on the part of the public of the teaching function of the hospital.

Hospitals we find ready to our hand. Laboratories worthy of the name, centres alike of teaching and of research, have only recently become necessary parts of a medical school. They greatly enhance the expense of medical teaching so that it can no longer be self-supporting. If there is any branch of human knowledge which requires so much outlay for instruction as does medicine to-day I know not what it is. I believe twenty millions to be a conservative estimate of the sum which could be economically used as a building and endowment fund for a complete medical school, with a hospital of, say, four hundred beds, all started *de novo*. Given the hospital, and we can cut the sum required in half. The salaries of the heads of clinical departments need not be large, but the heads of departments and laboratories, who should not do private practice and who get little or no indirect pecuniary reward, ought to be well paid, especially in a country like ours, where the pecuniary is too often the sole standard of success. In addition to laboratories of physiology, anatomy, and pathology, human and comparative, we should have those also of biological chemistry, hygiene and experimental pharmacology. General chemistry belongs rather to preparatory than strictly medical study. It is only by gifts, and mainly large gifts, from the public that our aim can be realized. We know what is needed and it is our duty to make the needs known. The needs are not ours, except in so far as we are members of the community. So clear is the need, so sure the return to humanity, so small the chance of doing harm, that the public-

spirited, intelligent citizen cannot but see what the opportunity is when it is properly set before him. I firmly believe that the next quarter century will see great sums flowing toward the prevention and alleviation of human suffering through investigation into the causes of disease. The antitoxin of diphtheria, like every other discovery in medicine, is unpatented, is equally within the reach of poor and rich. What an illustration it affords of the blessings and of the possibilities of medicine! How can a rich man so well spend a portion of his wealth as by helping to convert these possibilities into facts? Every gain is a gain for all time as well as for all humanity; indeed, it extends beyond humanity, and may be conceived as reaching all forms of life. Those who are not physicians and who are immersed in their own interests and affairs cannot be expected to see these things of themselves. I repeat that it is our duty to present the facts and the needs. If these needs are not gradually yet surely filled it will be the fault of the medical profession, not of the public. The pathology of the public is that of the medical profession x years ago. On our own ground we are and must be in the lead. What we ask is not for ourselves. If here and there selfish use is made of what we receive, such selfish use is transitory. What is the life of one man or set of men to the life of man? We shall get what we deserve, and our desert will be in direct proportion to our freedom from self-seeking. Physicians have better opportunities than even lawyers to influence gifts and bequests. It is true we are not so often consulted with reference to these points, but it is not necessary to wait to be consulted. Sooner or later all the world passes through our hands. There is nothing unbecoming in setting forth the needs of medical education and the opportunities which medical education in the broader sense offers for the welfare of mankind. It is interesting to note that one-half the funded endowment of the Harvard Medical School has come directly from physicians. Another quarter has come from the families of physicians. A son endows a professorship in memory of his father who was a physician; parents endow another in memory of their son who was a physician. Scholarships are similarly founded. The very large proportion of all these gifts dates from the intimate union of the medical school with the university. These facts seem to me very significant. The medical profession does not lead to the winning of large fortunes. No other class of men is so competent to estimate the needs and the opportunities of medical education as are physicians, and see how they have led the way. The formation of your Medical Fund through the self-denial of your professors who took no salaries is a striking case in point. So genuine and urgent are the claims of medical education that the corporation of Harvard University has lately appropriated several hundred thousand dollars, derived from unrestricted bequests, for scientific medicine. This is the first time in the history of the University that the Medical School has shared in the general University fund, and it is a most encouraging sign of the times. The general public will not be slow to do its share if the matter is properly and widely presented, unless I greatly overrate the intelligence and public spirit of the American people. And my confidence in the ultimate wisdom of the people is not shaken even by the failure of Congress to exempt in the War Revenue Bill legacies to charitable, educational and religious institutions from the succession tax. France and Germany, which support universities and hospitals out of the public funds, can properly lay heavy legacy taxes and thus force liberal contribution from large estates toward high purposes. Our principle has always been to entrust the provision and maintenance of the higher education to private benevolence. The real estate of educational and charitable institutions, used for the purposes of the institutions, is ordinarily free from taxation, and in so far the State fosters them.[2] And then Congress deliberately discourages those who are disposed to leave money in their wills for public purposes. Had Johns Hopkins died in the past year, all provisions of his will remaining the same, from the seven millions left the University and hospital, more than one million would have gone to the United States Government, which extracts fifteen per cent. of estates of a million or more. Is this not monstrous stupidity? It is true that any man can avoid the tax by giving in his lifetime; but most men will not. We must take human nature as we find it. The average man at present will give more freely from what he leaves than from what he has. Not many will imitate the example of a gentleman I have heard of, who had left a generous sum in his will to an object which interested him. On the passage of the War Revenue Bill he borrowed the money and gave it away, making the debt a lien on his estate, and thus making sure that all his money went where he wished it to go. Every one of us who has any interest with a member of Congress should make it his business to exert his utmost influence toward the repeal of this un-American provision of law. I find it hard to understand how we have submitted so tamely and made so little protest. Among the methods of reducing taxation, which seems to be admittedly unduly large, I have seen no suggestion of this obvious one.

Some standard of preliminary education and four full years of medical study are now prerequisites for those seeking to obtain the degree of doctor of medicine from the leading schools of the country. No uniform standard is possible or desirable in a country so large as ours, presenting so many and so widely varying conditions. Medicine has and always will have its commercial side. It never has had and never will have a purely commercial basis. The small bank and small store are all-sufficient to the needs of a small community. Not so the small doctor. The small community may or may not get the best medical skill, but it needs it just as much as the larger. The ailments and the means of relief are in the main the same in rich and poor alike; hence the foundation of hospitals, in which oftentimes the poor get better medical care than does the millionaire, who may exercise less judgment in the selection of his physician than in that of subordinates in his business, who may care for his dollars more shrewdly than he does for his health. Hence the laws for the regulation of the practice of medicine in force in so many States.

Of course, as a general rule, ambitious men, those conscious of power, and those who have made the largest investment of capital in their education, will seek the centres of population and the varied advantages which these offer. We do see men otherwise

[2] Since coming here I have learned that all the property of Washington University is exempt from taxation.

qualified for success anywhere settle in small communities, sometimes because they prefer to do so, often because they need a more immediate support from their profession than can ordinarily be earned in large cities. It has been my fortune to have seen something of the practice of many physicians over a considerable portion of New England, and it is a pleasure to testify to its general high character. In small places I meet men whose character, intelligence, professional knowledge and skill excite my admiration and respect. But I think it will be many years before the country as a whole can get along without three-year schools with low or lax admission requirements. There are men whom neither the community nor the profession can afford to lose, who simply cannot afford a longer or more expensive undergraduate training. I should not be surprised to see a few schools before many years pass extend their requirements to five years; but I should be surprised to see many schools take this stand, unless a service in hospital wards similar to that customary in the London hospitals is included in the five-year term. No small number of men now spend five and even six years in professional study before entering private practice, serving one or two years as hospital interne after graduating in medicine. To this a few add a year or more in European schools and men are nearly or quite thirty before they engage in practice. There was a time when European study was almost necessary to the American who wished a complete medical education. From a purely professional standpoint I do not believe it to be so now. A year or so judiciously spent on the other side of the water and a working intimacy with one or more foreign languages still make and will long make for mental enlargement and development. But first rate opportunities are now offered in one or another place in this country for the thorough prosecution of any and every branch of medical study. Now that we have our four years of graded study, so often followed by hospital internship, it seems to me that the urgent problem for the present is to make these years tell to their utmost limit, by (1) encouraging a better preliminary training for medical study than is now common or commonly enforced; by (2) most careful economy of the student's time through sequence and organization of his work, and (3) by a wise discrimination as to the dividing limits of required undergraduate and optional post-graduate study necessitated by the development of special knowledge and skill along many lines. It is absolutely impossible to go over the whole ground thoroughly in four, or even in five years for that matter. Medical teachers must train their sense of proportion, or of value, as the artists say. Those who settle in or near large cities have in their earlier years of practice time enough to take post-graduate courses. Many of those who settle in smaller places find a month or so in the year for study in a post-graduate school, and more will find that they also can do so. Undergraduate study is after all only a foundation. The physician is and must be a student all his life, and can learn something from every case which comes under his observation. If in the medical school a man learns the leading principles of medicine as a science, becomes acquainted with the methods of examination and cross-examination which the investigation of disease demands, and becomes imbued with the truth that more mistakes arise from not looking than not knowing — imbued with the principle of thoroughness — his Alma Mater will have small cause to be ashamed of him. The rings of annual growth may be even broader in practising than in school days. In the application of our knowledge we come to know its limits and defects — and ourselves. It is not until we come into actual practice that we can apply our knowledge fully, because it is not till then that the undivided responsibility for our action rests upon us. No course of study in a medical school can ever make the finished physician.

Much thought is being devoted to medical education at the present time. We are told on high authority that the medical education of the past has been all wrong, that the didactic lecture has no place in a proper curriculum, that the clinical lecture is only less bad, that the only method is one which forces the student to do and think for himself, the guidance of the teacher being reduced to a minimum, his inspiration raised to the maximum. That good practitioners abound, that the more scientific branches of medicine are taught and practised by men trained under the old methods, is neither proof that the methods cannot be improved, nor is it adequate argument against doing all we can to improve them. Claude Bernard, in his early days in Paris, and Helmholtz in Königsberg had small facilities; but true genius cannot be kept down and is apt to make its own opportunities. It is the average man who must mainly be considered in any scheme of medical education. To him opportunity and inspiring example may make all the difference between full and stunted growth.

Somewhat radical changes in method have been introduced for the first two years of the Harvard School and are now on trial. The first half year is devoted to anatomy and histology, the second half to physiology and physiological chemistry. The first half of the second year is given to pathology and bacteriology. Clinical work begins with and occupies much of the second half of the second year, with medical chemistry and materia medica. In reorganization of the third and fourth years section work will occupy a more prominent place than it ever has before, doubtless with great advantage to the student, who must get more from what he sees, feels does and thinks for himself than merely from what is told him. At the same time he must be told something. It seems to me that the systematic or didactic lecture has a very small place in the teaching of practical medicine and surgery. There are some important diseases it is difficult or impossible to illustrate adequately on the living subject. Among the medical diseases coming under this class, the contagious eruptive diseases may be mentioned, as also yellow fever, dengue and actinomycosis. In obstetrics the nature of the subject will always call for a number of pure lectures in preparation for practical work, except possibly in some small schools with unusual clinical facilities. The general principles of therapeutics and their application to the more common important diseases are probably best taught by lectures. The place of the clinical lecture seems to me larger and more permanent. The spoken is apt to be more vital than the written word. The actual illustration of a disease strikes deeper into the mind than does any description in the text-book, which is apt, moreover, to lead the student to think that the typical is the usual instead of being, as is really the fact, the rare case. A lecturer of large experience, clear head and

good judgment can with well-chosen illustrations teach what can be taught in no other way to a large class. The power of conducting a recitation in such a way as to keep alive the general interest and really profit a considerable class I believe to be a rare one, much more rare than the power to get good results from the clinical or didactic lecture. A combination of methods is useful, for different men learn in different ways. So also it seems to me wise that more than one teacher should give, let us say, clinical lectures on the same class of subjects. No two minds work exactly alike and the combined merits and defects of two or more teachers may well yield a larger result than can only one personality, unless a very great one.

A method of teaching by the printed statement of cases furnished to each member of the class and discussed by the members under the guidance of an instructor has been introduced into the Harvard and, I believe, some other schools. I think it likely to prove of high value in every school to a greater or less extent; to a greater extent the less the clinical facilities which a school may happen to enjoy. This method tends to train especially the reasoning faculties; but affords a direct stimulus to profitable text-book study, inasmuch as the purpose of such study becomes specific rather than general. It is a pleasant duty to state that the suggestion of this method is practically due to a member of the present fourth class of the Harvard Medical School, Mr. W. B. Cannon, to whose admirable statement of the method [4] I would refer those interested.

The lantern will play a larger part in the medical education of the future. All the special senses as well as the reasoning power of the student must be trained and appealed to in every possible way. I am sure that much can be gained by inviting the friendly criticism of the best students. As we grow older we are apt to grow lazy and averse to innovation. What was good enough for us we are liable to think good enough for our successors. The point of view of the young student is different from that of the old teacher and it is well to look at things from all sides. "Out of the mouths of babes and sucklings Thou hast ordained strength,"— strength, not all strength. I well remember how, in my student days, we packed the lecture-room of a brilliant lecturer on therapeutics at eight o'clock winter mornings. But to-day I am not alone in feeling that we were not getting as much as we thought we were getting. We were carried away by the personality of the teacher, a very able and impressive man, who knew how suggestion may be made to enhance the desired effect of a remedial agent as do few practitioners.

The main lines of progress then for the near future, as it seems to me, are the training of the student, as far as is possible, as an individual, rather than merely as a member of a class, and such a wise organization of his work as will conduce to economy of time and effort. This means a great expenditure of thought and energy on the part of a very busy class of men; but unless that expenditure be made, and I have no question that it will be, medical education will not progress as it should. It involves also the aid of the public, which should be taken into our confidence and will certainly provide the means. As the scope of medicine includes more and more the prevention of disease in general, rather than merely the alleviation and cure of individual cases of disease; as the training of the physician for the performance of his high functions becomes more and more complete, the influence of the medical profession cannot fail to increase. Physicians have for some time sat in the House of Commons. Lord Lister is the first medical man to be raised to the peerage in England; he will not be the last. The rapid advance in medical knowledge tends to bring to the front more and more legislative questions towards the solution of which the wise physician can contribute indispensable aid, and the broad training of the modern physician must strengthen his mind and increase his power of dealing with large questions.

In conclusion, Gentlemen of the Graduating Class, may I venture on one word of advice? You have been undergraduate students. You are about to enter on a lifelong period of post-graduate study. Remember that you are, every one of you, debtors to the medical school, debtors even in the lower and pecuniary sense of the term, in that the fees you have paid for your instruction do not nearly represent its cost. You are, therefore, under obligation to so conduct yourselves as men, as citizens, as physicians that you may reflect credit on the school. The exemption you enjoy from jury duty makes it the more incumbent upon you to do your share of service on Boards of Health, School Boards, and the like. If you make and carry out the inflexible rule of doing each piece of work, whether public or private, that comes to you, just as well as you possibly can, you will satisfy your Alma Mater and justify your existence. In as far as genius consists in the capacity for taking infinite pains, we are all potential geniuses.

I thank you for the patience with which you have listened to me, and wish you one and all the attainment of your heart's desire.

[4] Boston Medical and Surgical Journal, No. 1, p. 31, 1900.

Original Articles.

THE IDEAL RATION FOR AN ARMY IN THE TROPICS.*

BY EDWARD L. MUNSON, M.A., M.D.,
Captain and Assistant Surgeon, United States Army, Washington Barracks, D. C.

(Concluded from No. 20, p. 504.)

Fats.— In hot climates, where the human organism instinctively feels the need of a loss of heat rather than its creation, the consumption of fat — a heating food of the highest degree — should be reduced to the minimum and largely replaced by that of sugars and starches. Rubner [48] calculated that 100 parts of fat burned within the body yield as much heat as 232 parts of starch or cane sugar; and the distaste for fats in any considerable quantity, so early acquired in the tropics and so noticeable during the summer weather of temperate climates, may be considered as evidence of an unconscious but instinctive recognition of the fact that a dietary of decreased caloric value is sufficient for the needs of the organism exposed to high

* This essay was unanimously awarded the prize of $100, offered by Dr. Louis L. Seaman, late Major and Surgeon First United States Volunteer Engineers, through the Military Service Institution, Governor's Island, N. Y., for the best discussion of the above subject. The judges were Col. John F. Weston, Acting Commissary-General, U. S. Army, Lieut.-Col. Charles Smart, Deputy Surgeon-General, U. S. Army, and Lieut.-Col. William E. Dougherty, 7th U. S. Infantry.

temperatures, the more concentrated heat producers being rejected, while the desired distention of the stomach is secured by bulky vegetable foods of lower potential value. This dislike of fat under conditions of high temperature is too fully appreciated to require the production of evidence on this point. It is of interest, however, to recall the aversion with which the ration of bacon was regarded by troops in Cuba and Porto Rico during the war with Spain; while Cardwell [40] reported from Manila that "the salt meat (bacon) was in great part wasted and need not have been issued except in sufficient quantity to provide cooking fat."

As compared with carbohydrates, fats, as a whole, are notably less digestible and thus increase the evolution of heat through the more active chemical processes in the intestines. Furthermore, they are burned with more difficulty within the organism, since there is sufficient oxygen in the carbohydrate itself to form water with the hydrogen present, while fats require additional oxygen to combine with their hydrogen for their combination and elimination. Hence, in herbivora, according to Foster,[25] a larger proportion of the oxygen consumed reappears in the form of carbonic acid than is the case with carnivora, subsisting chiefly on proteid and fat. That this difference is by no means small is shown by the fact that the so-called respiratory quotient, obtained by dividing the excretion of carbonic acid by the consumption of oxygen, by volumes, is about .9 in herbivora, and about .7 in carnivora; a difference of 22 per cent. In the tropics, however, it has already been shown that there is a greatly diminished value, as regards oxygenation, to the respiratory act; and under such circumstances the amount of oxygen, already small, available for the needs of the organism as regards the elimination of carbon would be seriously encroached upon in the oxidation of a diet largely composed of fatty material. Furthermore, an excess of hydrocarbons in the food calls for increased hepatic action in the production of bile, since it has been abundantly demonstrated that the latter is a prominent factor in the digestion of fats, as shown by the fatty stools which follow obstruction or ligature of the bile ducts.

That this hyperstimulation of the liver — with its many evil results, elsewhere discussed — actually does occur in the tropics where more fats are introduced into the system than can be readily utilized, is shown by the bilious diathesis so common among high livers in warm climates, as characterized by excessive bile production and later by hepatic congestion. Fats and carbohydrates are much more akin to each other than is either to proteid; and if, as stated by Foster,[25] fat may be converted into sugar either when about to be incorporated into the organism or when being decomposed into its ultimate products, it might reasonably be expected that carbohydrates and proteid, with little or no fat, would form a satisfactory diet. That this conclusion is, in practice, largely borne out by facts is shown by reference to the foregoing tables, in which the fatty constituents of the vegetables ordinarily composing the diet of the native of the West Indies is only .32 per cent. while the corresponding part of the diet in temperate climates contains 2.23 per cent., or an amount seven-fold greater. On this point, however, experience is probably to be trusted. Natives of hot countries, when they can afford it, generally use a small amount of fats as such — as the clarified butter of India, the salt pork of tropical America, the olive oil of the Mediterranean districts and the palm oil of equatorial Africa — and it is probable that a small quantity of such material, together with the proteid and carbohydrates, assures a better use of the alimentary principles and reduces to a minimum the quantity of each which should be ingested. While it may, then, be conceded that a certain quantity of fatty food is a desirable component of the diet in warm climates it is certainly true that the amount so taken should be relatively small, and that the proportion commonly maintained in temperate climates is far in excess of the needs of the organism in the tropics. This fact is demonstrated beyond the possibility of question by referring to the average dietary for men at hard work in the north temperate region and that for the corresponding class in the tropics, as given elsewhere; the fats and carbohydrates being seen to exist in the ratio of 1 : 5.5 in the cold climates, while in the tropical dietary the relative proportion is 1 : 14 for men of the same weight. With such wide variation in the relation of these proximate principles, and in view of the fact that a considerable diminution in protein has also been shown to be desirable, it is evident that a sudden reduction of fat in the ration to the low standard of the tropical dietary might readily provoke such alteration of metabolic function and such interference with existing processes of digestion as would result in serious discomfort and positive detriment to the individual. The dietetic customs of a lifetime cannot be entirely changed in a day, and a stomach accustomed to rich and concentrated food would undoubtedly find difficulty in at once properly digesting a far more bulky and less nutritious diet composed chiefly of vegetable material. For the new comer in the tropics, habit as well as climate must be given consideration in the selection of diet; and it is therefore probable that no smaller proportion than that of one part of fats to ten of carbohydrates would be to the best interests of the United States soldier.

Carbohydrates and carbon. — Carbohydrates are justly regarded as the chief source of carbon supplied to the organism in the production of energy. This, however, is due rather to the much greater quantity of carbohydrates ingested, as compared with the fat and protein constituents of the ordinary diet, than to a high proportion of this element in the carbohydrate itself, for the amount of carbon in starch and sugar is relatively low. Notter and Firth [42] state that carbohydrate contains only 44 per cent. of carbon, where fat contains 76.5 per cent. and even protein contains 53 per cent. Through the considerable quantity of protein which enters into the diet, it is evident that the latter plays no small part in determining the carbon intake, as utilized for the creation of energy. The urea of the urine practically represents the whole of the nitrogen which passes from the body, and in any given quantity of urea the amount of carbon is far less than that found in the quantity of protein containing the same amount of nitrogen. Foster [25] states that the percentage composition of the two is as follows:

	Carbon.	Hydrogen.	Oxygen.	Nitrogen.	Sulphur.
Urea . .	25	6.66	26.67	46.67	—
Protein . .	53	7.30	23.04	15.53	1.13

It is thus readily seen that 100 grammes of protein, which have been suggested as furnishing about the amount of nitrogen desirable for the daily allowance of the United States soldier in the tropics, contains as much nitrogen as 33.3 grammes of urea; but the 100 grammes of protein contain 46.4 grammes more carbon than do the 100 grammes of urea (53 : 6.66, or about the proportion of 8 : 1). Hence the daily allowance of protein for tropical service in passing through the body and giving rise to urea, would leave behind 46.4 grammes of carbon to combine with oxygen and undergo elimination as carbon dioxide. It has been shown that the average diet of laboring men at hard muscular work in the cooler portion of the temperate zone contains 152 grammes of protein, and reduction in this respect to 100 grammes, the proposed standard for the tropics, implies a loss of 24.12 grammes of carbon previously available for purposes of energy. It is true that a certain amount of protein taken in as food, as shown by Mallet,[50] is not directly decomposed to the comparatively simple forms of urea and carbon dioxide, but, retaining a greater proportion of carbon, is excreted as creatinin or uric acid — bodies which, intermediate between protein and urea, form a series in which the proportion of nitrogen becomes larger and the carbon smaller — and it is probable that the amount of these substances is considerably increased in the tropics through the deficiency of oxygen available for the metabolic processes of the organism. In quantity, however, they are undoubtedly at all times so small as to be safely disregarded for the purposes of the present calculation.

As regards fats, as stated above, carbon enters into their composition to the amount of 76.5 per cent. and it has been shown that for the tropics the proportion of one part of fats to ten of carbohydrates in the dietary probably redounds to the best interests of the American soldier. On referring to the table giving the proximate composition of the average diets of hard-working men in the cooler portion of the temperate zone, it is seen that the amount of fats ingested by this class, 119.5 grammes, would be reduced, according to the above proportion, to 66.6 grammes; or, in round numbers, to a daily allowance of about 65 grammes in hot climates. This amounts to a reduction of 54.5 grammes of fats and 41.69 grammes of carbon; making the loss in carbon, due to diminution in the fat and protein constituents, amount to 65.81 grammes daily. The average working diet for cool climates, just referred to, contains 453.39 grammes of carbon available for the maintenance of body heat and the performance of external muscular work; this quantity, on subtracting the 65.81 grammes of this element withdrawn from the same diet through proposed reduction in fat and protein, being reduced to 387.58 grammes. But it has been shown that the native of the tropics performs hard labor on a diet which, even when proportioned for an average weight of 145 pounds, yields only 319.16 grammes of carbon presumably available for purposes of energy. It is undoubtedly true that this relatively small amount of carbon required by the natives of the tropics expresses to a considerable degree the lessened amount of energy necessary in the maintenance of body heat in hot climates; and hence approximation to the carbonaceous level of the native dietary would undoubtedly be desirable if the nutrient allowance for the soldier could be based upon requirements as to energy which, even if considerable, are at least fairly uniform. Unfortunately, however, for dietetic ideals, and undoubtedly, also, for the physical welfare of troops on duty in the tropics, a single fixed nutrient standard, as has already been advanced, must be determined with reference to the excessive requirements of infrequent emergency rather than by the ordinary conditions of military service. It has been stated that a greater part of the carbon oxidized within the organism is derived from carbohydrates, the latter being regarded purely as a force food and as the chief source of energy within the body. Carbohydratic material is capable of largely replacing fat in the dietary, diminishes nitrogenous metabolism, yields no end products to be excreted by the kidneys, is readily assimilated and, when in excess, is largely stored up within the organism as glycogen and adipose tissue. The ingestion of carbohydrates, therefore, in quantities greater than are required for the immediate needs of the economy, while not without certain untoward effects upon the system, is undoubtedly far less inimical to health than where there is an excess of protein or fat in the dietary for the tropics. It is probable, therefore, that further reduction in carbon for the proposed tropical ration need not be great, as far as any seriously unfavorable effect upon the organism is concerned; considering at the same time that a certain carbonaceous excess in the tropical ration, as compared with native standards, may justly be regarded as a reserve of energy upon which the soldier may draw at such time as the routine duties of garrison are exchanged for the arduous labors of campaign. For this reason, it may be accepted that the tropical ration should be capable of supplying about 380 grammes of carbon available for purposes of energy, not including the carbon required in the formation of urea. This quantity is yielded by the proximate principles of the subjacent dietary.

The tropical ration. — From what has been advanced it is seen that the proportionate composition and fuel value of the proposed standard dietary for United States troops serving in the tropics is as follows:

Protein, grammes.	Fats, grammes.	Carbohydrates, grammes.	Nitrogen, grammes.	Total carbon, grammes.	Fuel value, Calories.	Nutrient ratio, protein to energy.
100	65	650	16	392	3,491	1:8

The proximate alimentary principles, whose quantities and relative proportions are given in the above nutrient standard for the tropics, can be properly apportioned in the ideal ration for hot climates only as a result of an accurate knowledge of the percentage composition of such articles of food as may be selected to enter into its composition. The determination of these food stuffs, for the American soldier, is an easy task. The present United States Army ration, as already stated, is made up of admirably selected articles in more than sufficient variety; and it is therefore not only wholly unnecessary but quite inadvisable to consider, in this connection, any nutritive substances outside those articles legally established as components of the food for the United States soldier. The proximate composition of these has long since been deter-

mined — as given elsewhere — and hence the matter resolves itself into the simple problem of so proportioning the quantities of the nutrient articles already provided that, when brought together in varying combination, the resulting dietary will in each case approach the theoretical standard to a reasonable degree. It is not, however, intended that the daily intake of the several proximate principles shall exactly correspond with the quantities laid down therein, for this is manifestly impracticable for the military service, and even if its accomplishment were secured it is more than doubtful if there would be any resulting advantage. The economy readily adapts itself, in the matter of food, to present necessity, and slight deficiency in any nutritive principle is readily made good, particularly in the matter of fats and carbohydrates, from the reserve of these materials stored up within the organism — small systemic losses being subsequently compensated for by corresponding excess. It is true, also, that the needs of the economy, as shown by appetite, are subject to wide variation; and hence it may be accepted that slight but carefully considered alterations in the constituents of the daily dietary, far from being detrimental, are productive of actual benefit. It is obvious, also, that the soldier will require less nutriment in garrison than is necessary to furnish the energy for the greater labors of campaign, and hence the several components of the ration should be so proportioned as to furnish dietaries properly varying in potential and nitrogenous value. It is believed that this is accomplished in the following modifications of the dietaries already shown to be most commonly used by the United States soldier in temperate climates; the subjoined table showing the nutrient value of a proposed dietary for the tropics, containing the greatest amount of food material which can be drawn by the soldier:

TROPICAL DIETARY I.

Articles.	Quantity, ounces.	Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories.
Fresh beef	16	44.75	—	41.68	6.67	590
Flour	12	5.89	380.46	55.08	7.90	1,850
Beans	3.4	1.22	60.18	15.16	2.42	340
Potatoes	16	.45	81.70	9.50	1.52	380
Dried fruit	3	1.53	33.80	1.77	.27	220
Sugar	3.5	—	94.25	—	—	397
Total	52.9	53.85	630.39	123.19	18.78	3,677

Total carbon, 395.14 grammes; nitrogen to carbon 1:19.6.

The following table shows a proposed dietary for the tropics, especially applicable to field service, in which the fatty constituents attain their maximum and the potential energy is high:

TROPICAL DIETARY II.

Articles.	Quantity, ounces.	Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories.
Bacon	6	165.06	—	15.64	2.49	1,042
Hard bread	15	6.62	371.81	73.12	11.74	1,925
Beans	3.4	1.22	60.18	15.16	2.42	340
Dried fruit	3	1.53	30.70	1.77	.27	220
Sugar	3.5	—	94.25	—	—	397
Total	32.9	114.44	556.94	105.69	16.92	3,825

Total carbon, 328.76 grammes; nitrogen to carbon, 1:23.

The nutrient value of the ordinary dietary as proposed for garrison duty in the tropics is as follows:

TROPICAL DIETARY III.

Articles.	Quantity, ounces.	Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories.
Fresh beef	10	44.75	—	41.68	6.67	590
Soft bread	20	6.80	299.20	53.83	8 61	1,506
Potatoes and onions	16	.72	73.09	8.60	1.40	340
Dried fruit	3	1.53	30.70	1.77	.27	220
Sugar	3.5	—	94.25	—	—	397
Total	52.5	53.80	517.24	105.88	16.95	3,053

Total carbon, 328.76 grammes; nitrogen to carbon, 1:18.

For the following combination the several articles of the ration most closely approaching in character to the food materials used by natives of the tropics — proportioned in quantity according to the standard proposed for hot climates — have been selected:

TROPICAL DIETARY IV.

Articles.	Quantity, ounces.	Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories.
Fresh fish (cod) whole	14	.79	—	31.73	5.07	120
Soft bread	20	6.80	299.20	53.83	8.61	1,506
Rice	4	.45	88.87	8.75	1.40	407
Potatoes and tomatoes	16	.54	65.80	8 17	1.36	297
Dried fruit	3	1.53	30.70	1.77	.27	220
Sugar	3.5	—	94.25	—	—	341
Total	64.5	10.11	598.82	104.25	16.71	2,947

Total carbon, 327.50 grammes; nitrogen to carbon, 1:19.6

On averaging these four dietaries, as furnished by the ration proposed for the tropics, the mean nutrient composition is seen to be as follows:

Dietary.	Quantity, ounces.	Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories.
No. I	52.9	53.85	630.39	123.19	18.78	3 677
No. II	32.9	114.44	556.94	105.69	16.92	3,825
No. III	52.5	53.80	517.24	105.88	16.95	3,053
No. IV	64.5	10.11	598.82	104.25	16.71	2,947
Average	50.7	57.97	560.85	109.06	17.34	3,375

Total carbon, 350 grammes; nitrogen to carbon, 1:20.

It will be observed that while the above dietaries differ considerably among themselves, yet when averaged together in equal proportions they do not greatly vary from the nutritive standard for the tropics already proposed — and this is an additional reason why a selection of the same articles of the ration should not be made from day to day. It is seen that the above average dietary, as compared with the proposed nutrient standard, is still slightly deficient in fats and fuel value and a trifle in excess as regards protein. These defects, if they may be considered as such, are, however, readily corrected by a rotation of dietaries, in which Dietary II is used twice where Dietaries I,

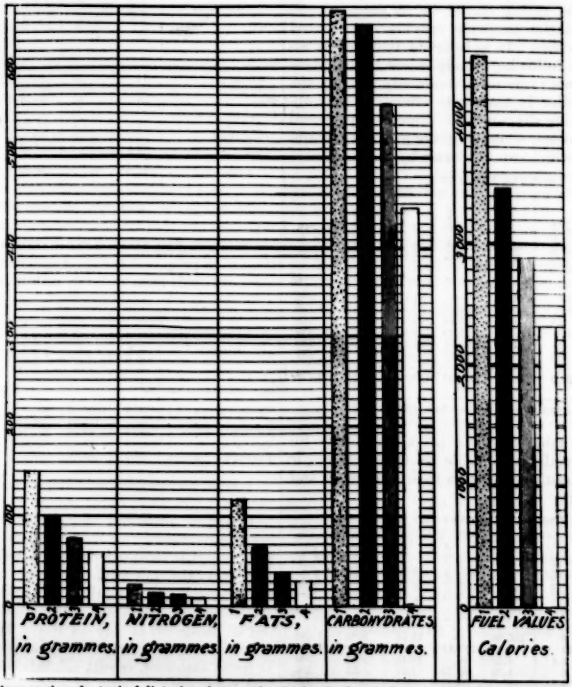
III and IV are each employed but once. The results of this change are as follows:

Dietary.	Quantity in ounces.	Fats, grammes.	Carbohydrates, grammes.	Protein, grammes.	Nitrogen, grammes.	Fuel value, Calories.
No. I	52.9	53.55	630.39	123.19	18.78	3,677
No. II	32.9	114.44	556.94	105.69	16.92	3,825
No. II	32.9	114.44	556.94	105.69	16.92	3,825
No. III	32.5	53.80	517.24	105.88	16.95	3,053
No. IV	64.5	10.11	598.92	104.25	16.71	2,947
Average	47.1	69.43	572.06	108.38	17.36	3,465

Total carbon, 363.33 grammes; nitrogen to carbon, 1:21.

From the above tables, it is evident that such changes as are advisable in the adaptation of the United States Army ration to tropical conditions are chiefly in the line of a reduction in quantity of the foods at present provided by a too generous government. It is true that the sugars and starches should be slightly augmented, but their increase is small when compared with the considerable reduction of nitrogenous and fatty material which is proposed. Many of the components of the present ration, as is seen by the following table, require no change in the consideration of the tropical dietary, being not only admirably selected but also properly proportioned:

Articles.	Quantity per ration, ounces.	Protein, grammes.	Nitrogen, grammes.	Fat, grammes.	Carbohydrates, grammes.	Fuel value, Calories.
Fresh Beef (quarters)	10	41.68	6.67	44.75	—	500
Or Fresh Mutton	10	46.20	7.35	62.90	—	720
" Pork	6	27.54	4.40	112.54	—	1,093
" Bacon	6	15.64	2.49	105.06	—	1,042
" Salt Beef	10	40.27	6.44	64.68	—	688
" Dried Fish (cod)	10	45.37	7.26	1.13	—	197
" Fresh Fish, average (whole)	14	31.73	5.07	.79	—	120
Flour	18	55.08	7.90	5.60	380.46	1,850
Or Soft Bread	20	53.83	8.61	6.80	209.20	1,506
" Hard Bread	18	73.12	11.74	6.63	371.81	1,926
" Corn Meal	20	50.40	7.99	12.40	425.80	1,986
Beans	2.4	15.16	2.42	1.22	40.18	240
Or Peas	2.4	16.38	2.62	.75	41.80	244
" Rice	4	8.75	1.40	.45	88.87	407
" Hominy	4	9.20	1.47	.67	88.75	430
Potatoes	16	9.50	1.52	.45	81.70	380
Or Potatoes 80% and Onions 20%	16	8.60	1.40	.72	73.09	340
" Potatoes 70% and Can'd Tomatoes 30%	16	8.16	1.30	.58	62.59	297
Dried Fruit (average)	3	1.77	.27	1.53	33.80	220
Sugar	3.5	—	—	—	94.25	397
Or Molasses	1 gill	—	—	—	56.05	289
" Cane Syrup	1 gill	—	—	—	56.25	289



1. Standard dietary as given by typical dietaries of men at hard labor in the northern portion of the temperate zone.
2. Standard dietary as given by proposed United States Army ration for tropical service.
3. Standard dietary for native laborers in the tropics; based on the weight of 145 pounds for purposes of comparison.
4. Standard dietary of the laboring class of natives in the tropics (Java, British India, Guadeloupe, Abyssinia), as determined from the food actually consumed by them at normal body weights.

The ideal ration for an Army of United States soldiers on duty in the tropics is therefore suggested as being of the foregoing composition.

REFERENCES.

1. Rattray. On Some of the more Important Physiological Changes Induced in the Human Economy by Change of Climate, as from Temperate to Tropical and the Reverse. Proceedings of the Royal Society of London, vol. xviii, 1869-1870.
2. Maurel. Les Guyanes. Art. Dictionnaire Encyclopædique, Déchambre.
3. Jousset. De l'acclimatement et de l'acclimatation. Paris, 1884.
4. Fayrer. On the Preservation of Health in India. London, 1894.
5. Rattray. On the Dieting of Seamen. Statistical Report of the Health of the British Navy. London, 1869.
6. Cullimore. Tropical and Subtropical Climates and the Acclimatization of the Fair Races in Hot Countries. Medical Press and Circular. London, 1888.
7. Vierordt and Ludwig. Quoted by Foster (33), Notter and Firth (42), and others.
8. Parkes. Manual of Practical Hygiene for the Army Medical Service. Philadelphia, 1868.
9. Fonssagrives. Traité d'hygiène navale. Paris, 1877.
10. Hill. The Disorders of Digestion Incident to a Hot Climate. The Australian Medical Gazette, February 20, 1896.
11. Mourson. Quoted by Roquemaure, Hygiène alimentaire aux pays chauds. Bordeaux, 1895.
12. Eijkman. Virchow's Archiv, 131, 1893.
13. Moore. Tropical Dietetics. The Medical Magazine, London, October, 1894.
14. Nielly. Hygiène des Européens dans les climats tropicaux, 1884.
15. Atwater. Foods for Man. Year-Book of Department of Agriculture, 1897.
16. Playfair. Chemical News, vol. xi, 1865.
17. Hultgren and Landergren. Untersuchung über die Ehrnährung schwedischer Arbeiter. Stockholm, 1891.
18. Erismann. Archiv für Hygiene, 1839, 9.
19. Prausnitz. Loc. cit., 1892, 15.
20. Ohlmuller. Zeitschrift für Biologie, 1884.
21. Atwater. Bulletin No. 38, Department of Agriculture, 1897.
22. Atwater. Bulletin No. 21, Department of Agriculture, 1895.
23. Manfredi. Archiv für Hygiene, 1893, 17.
24. Moleschott. Razione del Soldato Italiano. Rome, 1883.
25. Eijkmann. Zeitschrift für Biologie, 1889.
26. Goss. Nutrition Investigations in New Mexico, Bulletin No. 64, Department of Agriculture, 1896.
27. Atwater and Woods. The Food of the Negro in Alabama, Bulletin No. 38, Department of Agriculture, 1897.
28. Church. The Food-Grains of India. London, 1886.
29. Eijkman. Virchow's Archiv, 133.
30. Lapicque. Etude quantitative sur le régime alimentaire des Abyssins. Comptes rendus hébdomadaires des séances et mémoires de la Société de Biologie, 9 ser., 5, 1893.
31. Frissell and Bevier. Dietary Studies of Negroes in Virginia. Bulletin No. 71, Department of Agriculture, 1899.
32. Atwater and Bryant. The Chemical Composition of American Food Materials. Bulletin No. 28, revised edition, Department of Agriculture, 1899.
33. Foster. A Text-Book of Physiology. London, 1890.
34. Krukenberg. Separat-Abdruck a. d. Sitzungsberichte der Jena'ische Gesellschaft für Med. und Natürwissensch., 1885.
35. Pavy. The Physiology of the Carbohydrates. London, 1894.
36. Schuetzenberger. Bulletin de la Société Chimique de Paris, vol. xxiii.
37. Cohnheim. Vorlesungen über allgemeine Pathologie.
38. Seegen. Quoted in Landois's Physiologie.
39. Külz. Archiv f. exper. Path. und Pharm., vol. vi.
40. Von Mering. Zeitschrift f. prak. Med. 36, 1872.
41. Gayet. Guide sanitaire à l'usage des officiers et chefs de detachments de l'armée coloniale, Paris, 1897.
42. Notter and Firth. Theory and Practice of Hygiene, Philadelphia, 1896.
43. Communication to the Writer. Department of Agriculture, January 16, 1900.
44. Rochard. Dictionnaire Encyclopædique.
45. Maurel. Communication au Congrès médicale de Blois, 1884.
46. Treille. De l'acclimatement des Européens dans les pays chauds, 1888.
47. The Journal of Tropical Medicine, March, 1899.
48. Rubner. Zeitschrift für Biologie, 19, 1883, and Lehrbuch der Hygiene, Leipzig, 1889.
49. Cardwell. Report on the Sanitary History of the 2d Division, 8th Army Corps. Report of the Surgeon-General of the Army, 1899.
50. Mallet. The Physiological Effect of Creatin and Creatinin and Their Value as Nutrients. Bulletin No. 65, Department of Agriculture, 1899.

ON ISCHEMIC PARALYSIS AND CONTRACTURE OF MUSCLES.[1]

BY AUGUSTUS CHARLES BERNAYS, A.M., M.D., M.R.C.S., ST. LOUIS, MO.,

First Vice-President Western Surgical and Gynecological Association; Life-Member German Surgical Society of Berlin, etc.

AT long intervals the literature of medicine is adorned by a contribution from the master hand which not only marks an advance in our science, but which also is a work of art from a literary standpoint. Papers of this kind are sometimes epoch making. Others, because they are complete and leave no room for discussion, do not mark an epoch in the literature of medicine, but become no less potent in their final influence upon the actions and views of physicians and surgeons.

A paper of this latter kind is the wonderful memoir of Prof. E. Leser, which was first published in *Volkmann's klinische Vorträge*, Surgical Series, No. 77, whole No. 249, under the title of "Untersuchungen über ischemische Muskellähmungen und Muskelcontracturen." It is my intention to give in this paper a short résumé of this subject in a historical way and then to add my own observations and conclusions. In the introduction I will follow Leser, as he has looked up the subject thoroughly. I desire to say that this subject is of the greatest practical importance to all surgeons because it explains fully and in a satisfactory manner the bad results which often follow the treatment of fractures by means of hard and tight splints or unyielding plaster-of-Paris bandages which have been improperly applied.

The fact that muscles become paralyzed and stiff in consequence of interruption of the blood supply is one which has long been known to physiologists. In his work, "Elementa Physiologicæ,"[2] Albrecht von Haller states that Stenson was the first to make the experiment of tying the abdominal aorta in a warm-blooded animal. Stenson observed that the posterior extremities were paralyzed a very short time after the ligation. Shipper and many other physiologists have found that this experiment was faulty because it also cut off the blood supply from the spinal cord below the point of ligation. If the ligature was loosened soon afterwards mobility returned to the muscles, but if permitted to remain *in situ* perfect stiffness of the muscles followed inevitably. The muscles become rigid and hard and remain so. I varied this experiment slightly by ligating both common iliacs and ligating the aorta itself a short distance below the bifurcation where in tailless animals it is called sacralis media. The effect was the same and has been found similar by many experimenters when ligating the vessels supplying solitary muscles. The result which Kuhne arrived at may be stated as follows: The loss of irritability, the paralysis of the muscle, finally the rigor of the muscle is a consequence of the inhibited nutrition; the latter is caused by the interference with the circulation.[3]

[1] Read before the Tri-State Medical Society of Iowa, Illinois and Missouri, April 4, 1900, at St. Louis, Mo.

[2] Lausanne, 1763, p. 544.

[3] W. Kühne: "On the Movements and Changes of the Contractile Substances," in the Archives for Anatomy, Physiology, etc., edited by Reichert and Du Bois-Reymond.

Richard Volkmann, the great surgeon and the first apostle of Lister in Germany, sought to elicit the interest of practitioners in these remarkable observations made by physiologists. He was the first who saw that the restricted circulation is the cause of the grave contractures and paralyses of the hand and fingers which are sometimes seen after the application of firm, unyielding bandages and splints to the forearm.

The first remark on the subject in literature is found in Volkmann's book on the diseases of the organs of locomotion.[4] I quote him literally, that is, I translate:

"The severe contractures of the hand after the application of too tight bandages upon the forearm in cases of fracture depend largely upon an inflammatory contraction of muscles and not upon primary nerve paralysis, the result of pressure. We know that these cases of *Greifenklaue* (*main en griffe*), claw-like stiffness of the fingers, offer a most hopeless prognosis. The flexed contracture of the fingers and of the wrist persists in spite of all imaginable efforts, such as electrical treatment, passive motions and forced extensions under anesthesia; even amputation has been resorted to in extreme cases. I have never seen a complete cure and not even a satisfactory improvement, and once only a slight amelioration of the stiffness was achieved after long-continued painstaking exertions on my part. The contracture in these cases occurs rapidly and in a few weeks has reached the highest degree, which may cause ulcerating gangrene in the palm of the hand from the pressure of the finger-nails. In cases of paralytic contractures following apoplexy or nerve lesions, contracture is never observed in so short a time. In spite of these facts, the physician who has the misfortune to apply too tight a bandage very commonly resorts to all kinds of passive movements and attempts at extension of the contracted fingers upon all kinds of splints. In cases of interference with the nerve supply these manipulations always suffice to prevent the contracture."

In a very similar strain, a few years later, Volkmann[5] says: "The inflammatory or cicatrical contracture seems to be characterized by the rapidity with which it is developed, by the enormity of mechanical effects which are produced by it, and by the extraordinary resistances which it offers to our endeavors to remove the deformities, almost immediately after the inception. Many of the contractures which follow injuries, and which have heretofore been looked upon as contractures of nervous origin, depend upon inflammatory processes in the muscles, which are followed by shrinkage and cicatricial changes of the muscle tissues."

In a still more emphatic and unmistakable manner does this great surgeon express his conclusions about the etiology of paralyses and contractures in an article published in the *Centralblatt für Chirurgie* in 1881, No. 51:

"The paralyses and contractures occurring on the forearm and hand, in rarer cases also in the lower extremities, after the application of tight bandages, must be called ischemic. They arise after a prolonged pressure, which prevents the afflux of the arterial blood; the venous hyperemia which no doubt is very commonly present only seems to hasten the paralysis and stiffness. The paralysis is caused by the death of the primitive muscle fibres which have been deprived of oxygen. The contractile substance coagulates, falls into pieces, and is afterwards absorbed. The following contracture may be considered simply as a condition closely akin to rigor mortis, and indeed the limbs, if, as is usually the case, all the muscles of a part are equally affected by the ischemia, assume the well-known position as after death. It is characteristic of this affection that the paralysis and the contracture are simultaneous or follow closely upon one another, while in nerve lesions of the extremities the contracture is always of slow and gradual development, and often very tardy. Months and years pass before a contraction which is not easily reduced by manual pressure is found. The ischemic contracture, however, is recognized by the power of resistance which it opposes to any attempt at reduction from the very moment of its inception. The affected muscles have lost their elasticity and become unyielding and stiff, as in rigor mortis, even in fresh cases of ischemic paralysis. The reactive and regenerative processes which follow the death and disintegration of the contractile substances, which are unfortunately very imperfect in man and the warm-blooded animals, make the affected muscles more unyielding and stiffer and still further increase the atrophy by cicatricial contraction. Ischemic contracture and paralyses are sometimes observed in other cases than those following too tight bandaging. In cases of prolonged use of the Esmarch constriction of the limbs and after ligations, lacerations and contusions of large vessels, possibly also after prolonged freezing, these affections may occur, and it is possible that a part of the so-called rheumatic contractions are of an ischemic origin."

I have given these quotations from Volkmann's writings in full because they represent all that was known on these grave and eminently practical matters up to that time. Leser says that he is really astounded and surprised that not more can be found in medical literature on these most interesting and serious troubles, because they are not nearly so rare as might be supposed. I can say that I have never failed to illustrate the subject clinically during the past eleven years by a number of striking instances to my hearers at the college during each winter course.

Besides the grave and extreme cases there are a large number of less pronounced lesions of the muscles which are found after removing tight bandages, which no doubt are also due to ischemia of single muscles or groups of muscles. These peculiar affections have never been correctly explained, nor have they been carefully reported, though I think every surgeon must have met with them. The various degrees of stiffness and lack of motion in the fingers, which are so frequently found lasting for months after the removal of a splint or plaster-of-Paris bandage from a fractured limb, must no doubt also be classified under this head.

I desire to add that Carl Ludwig, the great German physiologist, proved by experiments that rigor mortis, death of the muscular tissues, takes place just as rapidly when blood free from oxygen is conducted through the muscle as when no circulation at all exists. On the other hand, Ludwig was able to show that when oxygenated blood was conducted through the vessels of an extirpated, isolated muscle the rigor of

[4] Pitha-Billroth System of Surgery, vol. II.
[5] Contributions to Surgery, p. 129.

the muscle could be delayed for a long time. Brown-Séquard succeeded in making muscles in the human cadaver contractile and even irritable by electric currents as long as four hours after death, when indeed the first stage of rigor mortis had begun, by injecting oxygenated blood.

These physiological experiments prove sufficiently well the effect of oxygenated blood upon the condition of the muscles, and establishes beyond a doubt that interruption of the circulation within a muscle must produce grave damages to the contractile substance, and must inevitably produce rigor mortis if continued longer than a few hours. Kraske[6] has shown that the muscles of animals cannot stand the complete absence of the arterial blood current for six hours. I know of one case where a long-continued use of the Esmarch constricting rubber band caused loss of mobility, and several similar cases have led to damage suits, both in this country and in Europe. Ischemic paralysis and contracture from this cause will produce a most aggravated lesion, because all the muscles of the affected limb distal to the constricting band will be ruined. This is not usually the case after tight bandaging. In these cases the ischemia is not complete and the amount of injury will depend upon the number of muscular fibres which become bloodless by the pressure. I have known cases where an entire muscle escaped. The case above referred to where a constricting Esmarch bandage caused ischemia and death of the muscles was not in a surgical case, but it concerned a case of placenta previa. The attending physicians, seeing their patient collapsed from acute anemia, resorted to the process known as autotransfusion. Both lower extremities were raised high up and a rubber bandage applied, beginning at the toes, thus forcing all the blood into the trunk and leaving the limbs bloodless. A strong rubber tourniquet was left around the middle of the thighs or a little below from about midnight until morning, and ether and whiskey were freely injected during this time. I imagine that these remedies deadened the sensibilities so much that the pain from the constriction was borne as long as it was — about eight or nine hours. The effect of the auto-infusion was satisfactory, but the patient's limbs were entirely motionless, hard and swollen below the middle of the thigh until she died from "prolonged shock" on the third day after her delivery.

The histological changes which are found in ischemic contractures of the muscles have been thoroughly investigated and described by three authors. The first experiments and histological examinations were made by Heidelberg, who published his paper in the *Archives of Experimental Pathology and Pharmacy*, Vol. VIII. The next work was by Kraske and is entitled, "Experimental Researches on the Regeneration of Striated Muscle Fibres," published in Halle, 1878. The third paper is the classical paper by Leser, published in 1884, in the same publication. Besides these, many examinations have been made of the muscles of limbs which were amputated because they were entirely atrophied and useless, or had become partially gangrenous. These examinations have completely corroborated the results of the experimental researches. I have made a small number of microscopical investigations, both experimental and clinical, and I prefer to report what I found to quoting from others, although there is no essential or important difference.

[6] Centralblatt für Chirurgie, 1879, No. 12.

I must begin by stating that a limb which has undergone ischemia as a result of tight bandaging will usually show all stages of the histological changes, from complete fibrous or cicatricial tissue to the ordinary lumpy disintegration of the contractile substance within the sarcolemma, as we find it in muscles which have become rigid after death. To the naked eye the slightly affected muscles will appear somewhat edematous and will be harder than normal, and may be paler and appear almost as if boiled. The most severely ischemic parts will be almost white and infiltrated with young gelatinous tissue.

Microscopical examination will show the fibres in an irregular arrangement, of unequal thickness. Some will be twice as thick as others, and I regard these as being pseudohypertrophied, which condition leads to atrophy in the end. Some of the fibres appear to have vacuoles, but the most characteristic change is the absence of nuclei or their very scant presence in the primitive fibres. This decrease in the number of muscle nuclei is striking and oftentimes I saw a little granular detritus in the place of the nuclei, or only a few nuclei scattered alongside of the bundles of fibres. Whenever the fibres appear broadened, no trace of the transverse striation can be found. The explanation of this histological picture as given by Heidelberg is that the nutrition and life of the nuclei are destroyed by the lack of blood circulation, and that afterwards when a new circulation is built up again the dead nuclei are absorbed and carried away. In more advanced portions of the tissue leucocytes abound between the fibres; we have the picture of small round-cell infiltration. This inflammatory condition of the intermuscular tissue soon changes it into young connective tissue, which eventually undergoes cicatricial contraction and assumes the structure of fibrous or tendon tissue. The muscle fibres and remnants of these finally become atrophic, fall to pieces and are absorbed. Thus as a final result of the disintegration and absorption of the muscular elements, together with the new formation of fibrous tissue, which shrinks into a cicatricial mass, we find the bellies of the muscles changed into hard fibrous and inelastic cords.

It is impossible to report cases, as each report could be made the basis of a damage suit against a surgeon, because the terrible condition in which the unfortunate patients are left is clearly due to tight bandaging, and the trouble thereby induced could have been avoided.

The recognition of ischemia produced by tight bandaging, as the cause of these damaging results, will prevent them in future. Therefore, the publication of these observations and their careful study by the members of our profession is, in the opinion of the writer, a most timely warning to those who have not devoted the time and attention demanded by the importance of the subject. It has been customary to teach that pain, after the setting and fixing of a fracture in a splint or cast of any kind, was an imperative indication to remove and loosen the whole dressing. This rule was the result of experience. The reason was unknown. In other words, it was a purely empirical rule of action. The scientific basis and true reason for the adoption of this rule has been given above. Nearly every physician and surgeon of any

considerable experience will not only appreciate the truth of what has been said, but if he be honest will recognize wherein he has erred and fully appreciate the wrongs he has unwittingly done. I say this from having experienced the pangs of remorse and self-accusation in two cases in which loss of the use of a limb is only ascribable to my own ignorance of the facts I have set forth above.

Among those who have seen and reported more than three cases may be mentioned:

(1) Leser.[7] Seven cases. (1884, Leipzig.)

(2) Bardenheuer. (Traumatisms of the upper extremity.) 1888. Four cases.

(3) Helferich. (Griefswald, 1893.) Three cases.

(4) König. (Göttingen, 1893.) Seven cases.

These names of celebrated surgeons who have observed and written upon the subject would seem to show that the peculiarly interesting condition is well known and that further observations are unnecessary. As an apology for this report, I may be permitted to call attention to the fact that I can find no allusion to this subject in any of the new and comprehensive text-books or systems of surgery published recently. When it is further remembered that the subject was made a special order of discussion at the annual session of the German Society of Surgeons in 1888 in Berlin[8] and that its practical importance can hardly be overestimated, I feel that my work in reporting the matter in this manner will be productive of good.

The only operation or therapeutic measure that promises any real benefit that suggests itself to my mind, and which I intend to try on a suitable case, is the excision of a transverse section of the radius and ulna. The piece to be resected should be from two to four centimetres in length, and both long bones would be shortened just that much — the contracted muscles and their tendons could then possibly exert a greater play upon the wrist and fingers.

It is clear that the muscular tissue in the forearm would not be increased by this operation, as indeed it cannot be by any possible surgical proceeding. The effect of the operation would be to give such remnants of contractile substance as may be in existence a chance to exercise their power to a greater advantage. The function of the fingers would thus be more or less improved, and the usefulness of the crippled hand increased.

Reports of Societies.

THE ASSOCIATION OF AMERICAN PHYSICIANS.

HELD IN WASHINGTON, D. C., MAY 1, 2 AND 3, 1900.

FIRST DAY.

THE President, DR. E. G. JANEWAY, opened the meeting with the following brief address:

For the fifteenth time it devolves upon the President to welcome the members of the Association to that gathering which has its chief interest in meeting those engaged in like work. We will hear from them that which, during the past year has seemed of all that they have met and observed the most fit to bring before colleagues interested in learning some new fact as regards the old diseases, or some new interpretation of the phenomena of those maladies. Fortunately we also have amongst our members those who are able to give themselves up to the study of pathology, and from whom, in the past, we have learned much of the pathological processes which underlie diseases, who will at this meeting continue their good work. Of late we have also been fortunate in having members who have given anxious thought to the chemical side of the study of the alterations of disease and who will again strive to enlighten us on this, the most difficult of the questions with which we have to do. Each of us who have attended the past meetings must admit of having received much of benefit from the presentations and the discussion of our associates.

Your President of this year looks back with regret at certain of the opportunities which he wasted in the past, under the stress of his professional work, and he only alludes to it in passing that he may stimulate the younger members to so arrange the year that they may find the time to both give and receive knowledge, thus making the meetings of this Association more valuable with each passing year. Let us endeavor to make this Association, so far as in us lies, as regards those matters which it falls under your province to consider, the equal of any throughout the world. If we are each possessed by such a noble spirit of rivalry, I am sure that our Association will not only maintain, but will surpass in the future that high regard in which it has been held.

Your President, in the fear that not enough of the members would bring material, sent out, as you know, two appeals. Results show that he was not sufficiently aware of the deep interest which you had in the success of our meeting on this year of the Medical Congress. The calendar, as you have read, is more than full, and in so far as he may have been responsible for this, the motto that "brevity is the soul of wit" is forced home upon his inner consciousness. It is his duty, as well as his privilege, to so allot the time that each member may be heard, and not himself to consume such time by his general introductory remarks as to infringe upon that which is the moral right of the member under the circumstances. But for this he would have been tempted to touch upon the theme — truth in medicine. This could have been handled under such heads as truth in statistics; truth in diagnosis; truth in therapeutics; truth in pathology.

Any society which has its annual meeting in the City of Washington, a city named after a man whose name could stand as a synonym for truth, should, so far as its members are concerned, need no other reminder of the value of truth; nor do I think that the members of this Association need even this reminder, for I take it we are all seekers after truth. Would that all who come to Washington could be so impressed by his name that only truth should be spoken in this city, or only honest methods followed in the pursuit of power, place and gain.

We mourn this year that two of our old associates can no more participate in these meetings; each has been conquered by death, whose ravages they have so long attempted to avert from others. I allude to our original member, J. E. Graham, of Toronto, Canada, and to D. W. Prentiss, of Washington, D. C., who joined in 1888.

[7] The Archives for Experimental Pathology and Pharmacy, vol. viii.

[8] See the Transactions, vol. xi, 1888, Berlin, A. Hirschwald.

DR. JAMES B. HERRICK, of Chicago, read a paper entitled

NOTES ON DIABETES: (1) ON THE OCCASIONAL LOW SPECIFIC GRAVITY OF DIABETIC SACCHARINE URINE; (2) ON CASTS IN THE URINE DURING DIABETIC COMA.

The author has noted the low specific gravity of saccharine diabetic urine, in some cases even below that of the normal urine. At any time in the course of the disease an interstitial nephritis may begin and the specific gravity may then fall. Consequently, if in a case of diabetes the specific gravity becomes low this condition should be looked for. Again, the drinking of large quantities of water will lower the specific gravity; in one case the urinometer showed as low a reading as 1.004. One patient who had been drinking beer and was partially intoxicated also presented a specific gravity of 1.004. Cases have been reported in which urine containing sugar showed as low a specific gravity as 1.002. These facts show that it is not safe to exclude the occurrence of sugar from a given specimen of urine because the specific gravity is low. The only plan is to examine all urines for sugar if there is any possibility that this abnormal ingredient is present.

Casts are common in many cases of diabetes mellitus when there is an accompanying nephritis. But casts may also occur just at the time of development of coma in diabetic patients. The author has seen this phenomenon in three cases in which it has been sought for. The sediment found in cases of diabetic coma is composed almost entirely of casts, which are short, broad and granular. They may appear long enough before the occurrence of coma to warrant preventive treatment. The first case occurred in a man, age sixty-five, in whom coma was advancing. The urine, obtained by catheter, contained a sediment composed almost entirely of finely granular "coma casts"; there was also a trace of albumin. The second case was in a woman, age eighty-four, who complained of sleeplessness and mental depression. The urine contained sugar and coma casts. The third patient was a woman, age sixty. Sugar had been present in the urine for three years and finally coma developed, which resulted in death. The urine at the time of the development of the coma was loaded with sugar and albumin and contained casts. The pathologic conditions causing the appearance of casts are unknown. The author expressed himself as believing that the condition might be due to toxic substances acting on the kidneys.

DR. JAMES J. PUTNAM, of Boston, read in behalf of himself and DR. F. PFAFF

A COMMUNICATION ON THE RELATION OF URIC-ACID SECRETION TO EPILEPTIC ATTACKS.

They think that the toxic theory of the neuroses and the psychoses is not well proved and that further search for anatomic changes should be made. They made twenty-four examinations of urine from three patients in the Massachusetts State Hospital for Epileptics. The results of these examinations do not bear out the statements that have been made that uric acid is below the normal for two or three days before the attack, then normal just before the attack, and above normal just after the attack.

DR. CHARLES G. STOCKTON, of Buffalo, read the

REPORT OF A CASE OF ACUTE ASCENDING PARALYSIS, SHOWING HEMATOPORPHYRINURIA.

The patient was a woman, age twenty-seven, a domestic by occupation. For two years before she was taken ill she had been overworked. She had lost weight but had no definite disease. She had been constipated for fourteen days, was irritable, anemic, restless at night; the appetite was good, the bowels regular. The urine was dark in color, acid in reaction, and free from sugar and albumin. Later she developed pain in the back and insomnia, for which sulfonal and trional were given. Both these drugs were vomited, however. The symptoms continued and the urine became claret colored, 1.025 in specific gravity, acid in reaction, contained neither albumin nor sugar, but showed a trace of indican. Physical examination showed areas of prolonged expiration in the supra- and the infra-scapular regions. The buttocks became anesthetic and the feces and the urine were passed involuntarily. There was weakness in the legs, with some shooting pains, and later the deep as well as the superficial reflexes were abolished, there was no response to electric stimulation of the muscles of the legs, and still later both the legs and the arms became paralyzed. The temperature rose as high as 100° and the pulse was 135 per minute. Just before death the patient was practically without sensation except in the head. The consciousness was perfect up to the time of death. The treatment was by hypodermoclysis, diaphoresis by hot baths, and the administration of codeine for the restlessness. The claret color of the urine was found to be due to the presence of hematoporphyrin. The author believes that there must be some relation between irritation of the nerve roots and the appearance of hematoporphyrin in the urine.

DR. JAMES J. PUTNAM said that he had seen a case of similar character. The patient was debilitated from accident and from chronic disturbance of nutrition from the use of morphine. He had numbness in the extremities, paralysis, tenderness of the muscles and emaciation. The patient died from failure of the respiration and of the circulation. The urine in this case was claret color. Sulfonal and trional had both been used. At autopsy there was no change in the cord, but the lesions of degenerative neuritis were found.

DR. E. G. JANEWAY had seen a woman who was an invalid from dyspepsia, to whom 10 to 20 grains of sulfonal had been given at night. Nausea and vomiting developed, the urine became claret colored, paralysis developed, and the murmur of mitral insufficiency developed. This patient recovered in one and one-fourth years. The speaker believed the case to be one of multiple neuritis.

DR. A. C. ABBOTT, of Philadelphia, read a paper on the

RELATIVE INFREQUENCY OF ACUTE TRANSMISSIBLE DISEASES DURING THE FIRST YEAR OF CHILDHOOD, WITH A DISCUSSION OF THE PROBABLE REASONS FOR THE SAME.

He presented charts showing the mortality from measles, scarlet fever and diphtheria in children under one year old, in children between one and five years, and in children between five and ten years of age. The tables show that the death-rate is greatest be-

tween the ages of one and five years, that from measles being 64.8 per cent., from scarlet fever 63.9 per cent., and from diphtheria 63.6 per cent. British statistics divide the mortality periods in the first year of life into three classes: between one day and three months, between three and six months, and from six to twelve months. The following death-rate is seen in these periods, given in order: measles, 2.7, 7.7 and 89.6 per cent.; scarlet fever, 7.6, 12.3 and 80.1 per per cent.; diphtheria, 8.3, 13.3 and 28.8 per cent. It will thus be seen that there is a great increase in the death-rate in the third period. The author believes that the mother transmits something to the child with the milk during the nursing period that acts as an immunizing agent and prevents infection. He quoted Ehrlich's experiments with mice, in which he was able to show the transmission of immunity to certain microorganisms from the mother to the nurslings through the milk, in support of his hypothesis.

DR. E. L. TRUDEAU referred to the fact of the possibility of the inoculation of young animals with tuberculosis in spite of the assertion by some authorities that young animals could not be infected.

DR. GEORGE B. SHATTUCK suggested that the number of mothers who had had diphtheria was comparatively few, that immunization against this disease was comparatively for a brief period, and that some other explanation must therefore be sought in this disease.

DR. J. B. C. GRIFFITH, of Philadelphia, read a paper on

RECURRENT VOMITING IN CHILDREN.

He had seen four cases. The attacks were characterized by severe vomiting, which was grave and continuous, by which everything was ejected from the stomach and which frequently continued when nothing was put into the stomach. The bowels were obstinately constipated, but even after relief the vomiting continued. The patient was restless, the respiration was of a sighing character, the urine was diminished in quantity. Two of the cases died. In one, autopsy showed an extensive degeneration of the epithelium of the stomach and of the intestine, parenchymatous changes in the pancreas, and the lesions of glomerulonephritis. The condition usually begins suddenly, without gastro-intestinal disturbance, and the vomiting is continuous. Constipation is present, relief of which does not stop the vomiting. Sighing respiration, which is noted, may be due to toxic action on the medulla or to weakness. Recovery begins from no apparent reason and convalescence is rapid. The attacks occur in from one to eleven days, but there is no distinct periodicity. Holt's theory that the cases are due to a change in the relation of the uric acid to urea is not confirmed by these cases. If it is a neurosis it is probably a toxic manifestation. The treatment is unsatisfactory; morphine sometimes does good and at times is of no use.

DR. CHARLES G. STOCKTON said that in a case that he had seen the vomitus consisted of almost pure gastric juice. When the improvement began in his case the hydrochloric acid disappeared from the vomitus. He had noted a periodicity. He believed the condition to be a neurosis.

DR. W. W. JOHNSTON had seen a patient suffering from the disease who had vomited blood. The blood was usually altered, although it was at times bright red. He had noted the rapid development of great prostration with cyanosis. All the children that he had seen were the offspring of nervous parents and were precocious and the victims of child-neurasthenia themselves. There seems to the speaker to be some connection between precocity and the occurrence of the disease. In one patient the attacks ceased suddenly after an attack of scarlet fever at the age of thirteen years. One of his cases had improved under rest and diet. The prostration was best treated by enteroclysis and hypodermoclysis. He believes that the development of a toxin, which may be the same as that concerned in the causation of neurasthenia in general, may be the cause of the disease.

DR. KINNICUTT agreed with Dr. Johnston in the use of hypodermoclysis and enteroclysis. He always had the fluid injected at a high temperature.

DR. FORCHHEIMER had seen several cases of periodic vomiting in children who were constipated and neurotic. These children had the anatomic basis of constipation, the exaggerated development of the descending colon. He thinks the toxins might be absorbed from the fecal matter contained in this dilated colon. Toxins thus absorbed are eliminated by the stomach. He thinks the treatment should be between the attacks.

DR. F. C. SHATTUCK had seen one fatal case in a neurotic and precocious child. The autopsy showed extensive fatty degeneration of the liver, kidneys and heart, which was recent and which suggested toxemic origin.

DR GRIFFITH thought that the vomitus should be more carefully studied. He believes in hypodermoclysis and enteroclysis and has observed the neurotic tendency in the subjects of the disorder.

DR. E. L. TRUDEAU, of Saranac Lake, read a paper on

SANITARIUM TREATMENT OF PULMONARY TUBERCULOSIS, AND ITS RESULTS.

For him the pretuberculous stage of pulmonary tuberculosis is the first stage of the disease, before the physical signs have developed. He uses the x-ray apparatus and the tuberculin test before the physical signs have appeared in suspected cases. By the x-ray apparatus the diaphragm may be seen to be higher or to be limited in its excursions on the affected side. The tuberculin test had not resulted in injury to any of his patients. In the treatment rest is essential, especially when taken in the open air. The patients at rest digest well although taking no exercise. Tuberculin as treatment is injurious whenever the process is progressing. It should be used only in apyretic cases and should be given in small and frequently repeated doses, watching carefully the nutrition and the temperature. The remedy probably stimulates the formation of fibrous tissue. During the past fifteen years, of the 1,176 patients discharged alive, one-half are living, and one-half of these are perfectly well.

DR. NORMAN BRIDGE thinks that when we begin to use sera we are apt to neglect the sanitary and hygienic measures that are so useful. He is an advocate of absolute quiet, full and free feeding, and fresh air. It may at times be necessary to wash the stomach and the large intestine.

DR. S. S. COHEN asked Dr. Trudeau what method of diagnosis he employed before the disease was far enough advanced to give results by x-ray examination; and whether under the term rest he included

local rest of the lung, as well as general rest of the body.

DR. TRUDEAU said that he made the diagnosis in early stages of tuberculosis by the temperature record. If the evening temperature is between 99.5° and 100° and there is a slight disturbance of health he makes the diagnosis. Tuberculin should be used only when necessary. Experiments with corneal lesions in rabbits artificially produced show that tuberculin does not cause the spread of the lesion. He procures rest of the lung by rest of the individual.

The Secretary read a paper for DR. C. A. HERTER, of New York, on work done in his laboratory by Dr. Helen Baldwin, on

THE ORIGIN OF OXALURIA FROM FERMENTATION IN THE GASTRO-INTESTINAL TRACT.

The author concludes that in health there is no oxalic acid formed in the body, but that it is ingested with the food. In morbid conditions, on the other hand, particularly those associated with the absence of free hydrochloric acid in the gastric juice, oxalic acid may be formed in the stomach, possibly by a ferment.

DR. JAMES TYSON stated that he had studied urines containing deposits of oxalate of lime. As many healthy persons have oxaluria as those who are old and diseased. In those who present the condition the oxalate of calcium is present at all times. Milk is the only food that will cause total disappearance of the oxalate of calcium clinically.

DR. F. P. KINNICUTT, of New York, showed the specimen from a case of

ACUTE PHLEGMONOUS GASTRITIS.

The patient was a male, age forty-one years. There was no history of syphilis, but the patient was an alcoholic. The disease followed a drinking spell and was ushered in by vomiting, first of food and later of a brownish fluid. There was abdominal pain, constipation, dry tongue, shallow respiration, 48 per minute, regular pulse, 108 per minute, restlessness, and an anxious expression. The temperature was 101° by rectum. The physical examination was negative except for a slight hypertrophy of the left ventricle. The abdominal walls were rigid and deep palpation was sensitive in the epigastric and left hypochondriac regions. There was crepitation beneath the left costal cartilages. The urine contained casts. The patient grew progressively worse and surgical intervention was deemed inadvisable. At the necropsy the organs were normal except for the hypertrophy of the left ventricle of the heart, before alluded to. The peritoneum presented a slight serofibrinous exudate. The stomach wall was thick, especially at the pyloric end. The thickening was due to a purulent infiltration of the submucous coat, with a yellowish exudate. There was a linear cicatrix on the posterior wall of the stomach, near the pylorus, on which was a necrotic area. The endothelium was desquamated on the serous coat. The muscle was invaded by mononuclear leucocytes. The submucosa was swelled to four or five times its normal thickness, and contained leucocytes and microorganisms. The lymphatics contained bacteria. The necrotic area in the scar had nearly exposed the submucosa and was possibly the point of infection. The streptococcus was found throughout the stomach. The bacilli in the lymphatics were possibly of post-mortem origin.

DR. WILLIAM H. WELCH stated that he had seen a similar case in which there was a fibrin-purulent peritonitis. The patient was an alcoholic. The pus was found principally in the submucous coat of the stomach.

DR. E. G. JANEWAY had seen three primary cases and two secondary cases. One of the patients was not a drinking man, and the two secondary cases followed sepsis and were local in their areas of involvement.

SECOND DAY.

DR. J. H. WRIGHT, of Boston, read a paper on

THE ORGANISM AND LESIONS OF ACTINOMYCOSIS.

The author believes that the disease is frequently unrecognized, and that it is much more common than is ordinarily supposed. He gave a lantern demonstration of the lesions produced by the organism. In the liver of a fatal case there were dark areas that represented colonies of the organism, which grows as masses of radially disposed filaments, which are situated in the middle of an abscess, which, in turn, is surrounded by fibrous tissue so that it is walled off from the surrounding liver tissue. Within the colony the individual filaments are seen to be separated from each other by masses of hyaline substance which represents masses of dead filaments. Sometimes the central portion of the colony is composed entirely of this hyaline substance with the living filaments surrounding it at the periphery in a radiating manner. Some of the filaments have clubbed ends, and, again, in the periphery of the colony there is a zone of rays or clubs which represent degenerations in the filaments. This latter form is seen particularly in chronic forms of the disease. The specimens were taken from a case in which the liver, the lung, the kidney, the foot and the abdominal wall were involved. The primary involvement was in the dorsal region, the abscess perforating the pleura. There was an abscess in the wall of the heart that projected into the left ventricle. Macroscopically, the pus from these abscesses contains pearly granules that are composed of filaments. Cover-glass preparations made from these granules, after they have been crushed, show the filaments and their characteristic branching. A certain diagnosis is to be made only after having examined both the crushed and unstained granules and the stained specimens. Culture of the actinomyces is difficult on account of the secondary infections which are so likely to occur. The organism is anerobic, and in a bouillon culture is seen as a granular deposit on the bottom and sides of the tube. It will also grow on agar-agar and on blood serum. It is, in all probability, a streptothrix.

DR. J. M. DA COSTA called attention to the fact that large doses of potassium iodide give remarkable results in the treatment of the disease, even producing cure in some cases.

DR. L. HEKTOEN, of Chicago, read a paper on

A NEW PATHOGENIC FUNGUS (SPOROTHRIX SCHENCK).

The patient who furnished the text for the paper was a boy who presented multiple refractory abscesses on the arm as the result of an injury to the hand with a hammer. The disease was of three months' duration and twenty-four operations had been done. The abscesses contained a thick, viscid pus, culture of which

resulted in the growth of a fungus. These cultures became brownish as they grew old. Plate cultures show a central mass of mycelium, and radiating from the periphery of the central portion masses of spore-bearing threads. The organism is pathogenic for mice and white rats, producing chronic suppurative processes. After peritoneal inoculation tuberculous nodules develop that contain at first masses of coagulation necrosis, with fibrin, and later thick pus filled with spores, but no threads.

DR. SIMON FLEXNER said that he had no doubt but that this fungus and the organism of Schenck were identical. He called attention to the fact that in small animals the organism of Schenck produced a septicemia, with enlarged lymphatic glands, the latter containing micro-organisms.

DR. HEKTOEN said that he had not been able to produce a septicemia in mice, and that that was the only difference between this organism and the fungus of Schenck.

DR. RICHARD C. CABOT, of Boston, read a paper on

SOME OF THE CONCLUSIONS ARRIVED AT AFTER A STUDY OF 110 CASES OF PERNICIOUS ANEMIA.

Of the 110 cases reported 57 were males and 53 were females. Of the cases occurring in the female subject four followed parturition and in one of these, in which an autopsy was had, there was leucocytosis and diphtheritic endometritis. The diseases is one of late middle life. He had seen all the cases within seven years and thinks that the disease must be common in New England. Not a few of the cases in the series were originally diagnosed as general tuberculosis. Fourteen cases occurred at about the time of the menopause. Hemorrhage is probably a symptom and not a cause of the disease; it has been observed from the bowels, the nose, the gums, the stomach and the ear. The symptoms are constant; in certain cases they are very mild; there is a lack of relation between the severity of the blood lesions and the severity of the symptoms, and it is not the lack of the corpuscles only that causes the symptoms. Muscular weakness, dyspnea, gastro-intestinal symptoms, such as vomiting and diarrhea, are seen. The latter train of symptoms is often paroxysmal. This fact is evidence against the hypothesis that atrophy of the gastric tubules is a cause of the disease. Hemic murmurs are always heard and occasionally a true regurgitant murmur is to be made out. The liver was enlarged in 30 cases, the spleen was enlarged in 13 cases. There were hemorrhages into the retina in 36 cases and 15 eye grounds were normal. In 66⅔ per cent. of the cases fever between 99° and 100° was noted. The urine was usually pale. The urine was normal in 53 cases. In other cases albumin, with hyaline and granular casts, was seen. There were nervous symptoms in one-third of the cases; but this must not be construed as representing the total number of nervous lesions, because lesions may occur without giving rise to symptoms. In 106 cases the red blood corpuscles were below 2,000,000 and in four they were above that figure. The leucocytes in 72 cases were below 5,000, and in 38 cases they were above that figure. The hemoglobin in 79 cases was high and in 31 cases normal or low. The red cells were usually increased in size and megaloblasts were found at some time in 107 of the cases. In the three cases in which they were not found the blood was examined only once. The percentage of lymphocytes on differential count of the leucocytes was high, but the explanation of this result is that the lymphocytes were in reality normal, and the polymorphonuclear leucocytes were decreased. Myelocytes were present frequently. In the periods of remission of the disease the red corpuscles usually rise and the hemoglobin falls, resulting in a condition that resembles chlorosis. The leucocytes also increase during this period, the additional number of cells being polymorphonuclears. The megaloblasts disappear, normoblasts take their place, to disappear in turn. The symptomatology and course of the disease, as well as the result of the blood examination, are not at all like those of secondary anemia. In those cases in which latent carcinoma has been found the carcinoma is not necessarily the cause of the pernicious anemia. No case recovers. In mild cases diarrhea is common. Twenty cases were progressive, in 69 cases one or more remissions were seen and 21 of the patients went to work. Remissions may take place in from 10 to 14 days. In 76 cases the duration of the disease was from one to three years. Treatment is hopeless; arsenic and bone marrow have no effect, but in some cases laxative treatment seems to have done some good. This bears out Hunter's idea that the disease is a toxemia.

DR. FRANK BILLINGS, of Chicago, showed charts to illustrate

A REPORT OF CASES OF PERNICIOUS ANEMIA, WITH A SPECIAL REFERENCE TO THE BLOOD FINDINGS.

In all 19 cases were reported, 11 in males and eight in females. The average age of the patients was forty-six years. No exciting cause could be determined except syphilis in one case. The symptoms were muscular weakness, dyspnea, palpitation, gastro-intestinal symptoms, and diarrhea, as a rule. Nervous symptoms were frequent, particularly paresthesia of the lower extremities. The lemon-yellow tint was constant, the body-weight was preserved, cardiovascular symptoms were common, the spleen was enlarged in four and the liver in three cases. The stools were negative in all cases except one, and in that one infusoria were present. The disease, as a rule, progressed rapidly. Hemorrhages were frequent, retinal in three cases. The hemoglobin varied from 15 per cent. to 74 per cent.; the red blood corpuscles varied between 150,000 and 4,000,000; the color index was above normal in 53 out of 66 examinations, sometimes it was low. The leucocytes were usually below the normal. The color index diminished during the remission and increased during the exacerbation, as does the number of nucleated red corpuscles. Direct infusion of blood produced, in one case, very little effect. The myelocytes were most abundant when the patient was at the lowest ebb. The occurrence of megaloblasts are of importance in the diagnosis and when the nucleus of the cells is irregular it indicates an increased degenerative change.

DR. FREDERICK P. HENRY, of Philadelphia, reported five cases of pernicious anemia in a paper entitled

CLINICAL NOTES ON CASES OF PERNICIOUS ANEMIA.

In one of the cases the transfusion of blood from an epileptic patient was followed in ten days by convulsions. One case has been under observation six years

and was completely restored to health. In this patient naphthaline, bismuth salicylate, Fowler's solution, cod-liver oil, and calomel were the drugs used. The author thinks that patients suffering from pernicious anemia often present peripheral neuritis. He also thinks that the disease is likely to be complicated by erysipelas. He has never seen a case of gastric carcinoma in which the red blood corpuscles were reduced below 30 per cent. and he thinks that a reduction in the number of red cells below this figure is a diagnostic feature in pernicious anemia. He is of the impression that the muscular system preserves its power. He believes that the corpuscles seen in the blood in this disease are reversions to the type of those seen in the cold-blooded animals.

Dr. Richard C. Cabot said that he did not consider the case that Dr. Henry reported as having recovered to be a case of pernicious anemia; he should consider it a case of grave secondary anemia of unknown cause.

Dr. Kinnicutt thought that one of the most important points elicited by the papers was that bearing on the prognosis. He hopes that some means will be found to benefit the condition.

Dr. Hobart A. Hare said that he believed that the disease is more common than the text-books teach. The majority of patients that he has seen suffering from the condition were from the country. The duration is at times long. He believes that arsenic causes improvement and that transfusion is futile. He said that he thought that the changes of the blood in health should be more thoroughly studied and that the knowledge of the changes in the normal blood is one of the weakest points in hematology.

Dr. W. H. Thomson referred to a case of pernicious anemia in which the roots of the teeth and the gums were the seat of a purulent disease. He referred to the theory of Hunter, that in such conditions the constant swallowing of pus containing streptococci might give rise to lesions in the gastro-intestinal tract that, in turn, might lead to pernicious anemia.

Dr. A. McPhedran reported two cases of permanent recovery from pernicious anemia. He believes in saline infusion as a method of treatment. In one case he administered antidiphtheritic serum because there was no other serum obtainable. The patient so treated remained well for one and one-half years, but then died. Other patients have received blood serum. He has looked for diseased teeth and gums in many of his patients and all have healthy gums except one. In the excepted case the gum condition gets worse with the exacerbations of the disease.

Dr. S. Weir Mitchell said that all blood counts were relative and not absolute. He called attention to the work of Dr. J. K. Mitchell on the influence of massage on the blood count. After one-half or one hour of massage the red cells increase 500,000. He thinks that the stagnation of the red blood corpuscles in various parts of the body is greater in disease than in health, and he is of the opinion that disturbing these reserve corpuscles by massage would greatly change the blood count.

Dr. Charles G. Stockton said that he had always found that the gastric secretion in pernicious anemia was different from that obtained from cases suffering from secondary anemia. In the former disease the hydrochloric acid always disappears during the exacerbations and returns during the remissions.

Dr. W. S. Thayer said that he had seen cases of gastric carcinoma in which the red blood corpuscles were lower than 1,500,000; in one case, indeed, the red cell count was below 500,000. The blood count alone is insufficient for diagnosis. The most important cells are the large ovoid cells, two or three times as large as the red blood corpuscles and with pale staining nuclei. In one case that had been diagnosed as pernicious anemia, carcinoma of the pylorus subsequently developed.

Dr. J. M. Da Costa called attention to the fact that the remissions were at times very long, in one case lasting for eleven months. The fever sometimes resembles the high fever of typhoid and is more marked than in other grave blood diseases.

Dr. James B. Herrick said that the improvement of the patients depends, apparently, upon a relative increase of red cells and hemoglobin and not on an absolute increase to normal.

Dr. Richard C. Cabot said that systematic massage had been given to four cases of pernicious anemia after Dr. Mitchell's paper had appeared, and that in these patients there had been less increase in the number of corpuscles after the massage than in perfectly normal persons. The lagging corpuscles, therefore, in cases of anemia seem to be less in number than in health. He does not consider the splenization of the bone marrow characteristic of pernicious anemia, because any secondary anemia may show the condition if it is severe enough. He thinks the large-sized corpuscles with the pale staining nuclei to be characteristic. Transfusion may produce nephritis and is, therefore, not advisable. Since spontaneous improvement occurs when arsenic is not used, arsenic cannot be thought to be the cause of improvement. He was in accord with Dr. Da Costa concerning the occurrence of fever. Since all patients in the medical wards of the Massachusetts General Hospital have systematic blood examinations made, he thinks that the normal condition of the blood is well understood.

Dr. Henry repeated his statement that he had never seen a case of gastric carcinoma in which the red blood corpuscles were reduced below 30 per cent.

Dr. F. B. Mallory, of Boston, read a paper on

Proliferation and Phagocytosis.

As a result of the action of toxins we find four processes: (1) Degeneration of cells; (2) exudation from the vessels; (3) proliferation of cells; and (4) phagocytosis. Strong toxins cause degeneration and exudation, while weak toxins cause proliferation and phagocytosis. The pneumococcus produces proliferation of the cells lining the pleura, and the cells in the lymphatic vessels, and in the lymphnodes of the lung; these cells are phagocytic. The toxins that are eliminated by the kidney produce proliferation of the cells of the glomerulus and of the epithelium at the beginning of the uriniferous tubules. The typhoid bacillus usually produces a mild toxin that causes proliferation of the lymph cells and of the endothelial cells in the digestive tract and in its neighborhood. The majority of these cells are phagocytic. The phagocytic cells block up the blood and the lymph channels and may also pass into some tubular structure and do harm by pressure. In tuberculosis there is sometimes proliferation of cells and sometimes exudation. When polymorphonuclear leucocytes, lymphoid cells, myelocytes or red blood corpuscles are included within the

phagocytes their nuclei disappear, showing that they are undergoing degeneration. The phagogytic cells are possessed of ameboid motion. When epithelium takes on phagocytic properties it is usually epithelium of an undifferentiated type, such as that in the lung. In the kidney the phagocytic cells are found in the tubules and in the connective tissue between the tubules. Some of the cells contain structures that resemble the colon bacillus. These cells possibly originate in the connective tissue and pass through the walls of the tubules. In the epididymis phagocytic cells were found that were digesting the spermatic filaments. They were probably endothelial cells. In a case that was thought to be one of papillomata of the bladder the tumors were found to be composed entirely of phagocytic cells containing what were probably colon bacilli. Cells that have proliferated under the action of a toxin degenerate when the toxin disappears. The proliferated cells are not reparative and may work harm.

DR. WILLIAM H. WELCH said that toxins and bacteria appear to cause proliferation of the cells primarily; but Weigert assumes some pre-existing damage to the cells. He thinks that an important function of toxins is to excite necrosis, and that the plugging up of the vessels is not the entire extent of the damage done. He believes that the large cells containing leucocytes and lymphoid cells are cells of low resisting power and that they are being attacked by the leucocytes.

DR. MALLORY said that he thought that the passive cell in the phagocytic process was the one that degenerated. The included cells, lymphoid cells and leucocytes show degeneration of the nuclei.

DR. W. S. THAYER, of Baltimore, read a report of

CASES OF DIARRHEA ASSOCIATED WITH THE PRESENCE OF STRONGYLUS INTESTINALIS IN THE STOOLS.

He reported two cases. The relation of the parasites to the diarrhea is questionable. One of the patients had lived in Austria and then six years in Baltimore; the other patient had lived all his life in Virginia. He believes the worm to be more common in this country than is supposed. He made a plea for more frequent fecal examination.

DR. STILES, of the Bureau of Animal Industry, said that when the farmers had cases of obscure disease develop in their cattle feces are always sent for, and that a diagnosis could often be made from the examination of this material. He thinks that troops returning from the tropics will bring back worms. The forms found in these patients are found in the lungs of the frog. Male fern has given good results therapeutically.

THIRD DAY.

DR. W. T. COUNCILMAN, of Boston, reported for DRS. LOTHROP and PRATT

A CASE OF FILARIA, WITH SPECIMENS OF THE ADULT PARASITE.

The patient was a male, age twenty-two years, who had resided for some time in the Barbadoes. He complained of pain and swelling in the groin of one month's duration. A plexus of dilated lymphatic vessels was removed from the groin, and two weeks later the left tunica vaginalis became swollen, and a fluid that contained filaria embryos was withdrawn. The blood examination showed the presence of the adult filaria at night. The left testicle was removed and worms were found in the substance of the gland near the epididymis. The author then described the morphologic characteristics of the worm and of the embryos. A brother of the patient, apparently in good health, had filariæ in his blood at night. Dr. Councilman showed specimens of the adult female worm and drawings of the adult worms of both sexes, as well as of the embryos.

DR. WILLIAM H. PARK, of New York, read a paper on

THE ELIMINATION OF DELETERIOUS SUBSTANCES FROM ANTITOXIC SERA.

That the antidiphtheritic sera contain some deleterious substance is shown by the development of rash, fever, and joint symptoms after its use in certain cases. Filtering an antitoxin serum has no effect on these substances. Heat has no effect upon them. Bleeding from some horses has given rise to sera that produce far less complications than bleeding from other horses, and bleeding from the same animal gives rise to sera of varying deleterious contents at different times. Experiments show that chemically antitoxin is either a globulin or a globulin-like substance, and that it is inseparably attached to the globulins. A dried globulin, produced by precipitation and used after being dissolved in water, showed that the antitoxic strength was the same as that of the serum, but it was slightly more irritating locally. The best method of producing sera that shall be devoid of deleterious substances is to select the horse the serum from which produces the least complications, and to put serum from that animal on the market.

DR. GEORGE L. PEABODY said that he had divided one bottle of antitoxic serum between three people for purposes of immunization. Two of the patients injected had no symptoms, while the third developed joint symptoms, urticaria and fever.

DR. MELTZER inquired whether one could be immunized against the occurrence of rashes by the repeated injection of the same serum.

DR. PARK said in one individual repeated injections were not likely to produce repeated rashes.

DR. F. F. WESTBROOK read a paper for himself and DRS. WILSON and MCDANIEL entitled

VARIETIES OF THE DIPHTHERIA BACILLUS.

The classification of the diphtheria bacillus is based on the morphology of the individual bacilli. Three classes are recognized: (1) Granular forms with granules in the body of the organism that are metachromatic; (2) barred forms; (3) solid color forms, including those that look like diplobacilli. In pure cultures all three forms may be found.

DR. ABBOTT said that the great difficulty in classifying the diphtheria bacillus is that we do not know its normal morphology. In fact, we are not sure that the organism is a bacillus. He believes that by altering the environment of the different forms they are interchangeable. The original descriptions of the characters of the organism are more satisfactory than the later descriptions. The difference in the preparation of the medium, which gives us a hard, leathery serum instead of a granular, soft mass, may account for the discrepancy in the descriptions. The third

group that is described is probably composed of involution forms.

DR. PARK said that the appearance of the micro-organisms does not indicate their virulence. In an institution that he knew of, measles was always followed by diphtheria; but now the officers give an immunizing dose of antitoxic serum to all patients that develop measles, and no diphtheria cases develop.

DR. WESTBROOK said that the alteration in the environment of the micro-organisms had been studied. The organisms in the third class had always been found in connection with those of other classes, and not in pure culture.

DR. W. W. JOHNSTON, of Washington, presented a

CASE OF ADDISON'S DISEASE UNDER TREATMENT WITH SUPRARENAL EXTRACT.

The patient was a male, a farmer, in whom the symptoms had appeared suddenly with loss of flesh, weakness, and gastro-intestinal symptoms. Pigmentation appeared later, and was accompanied by exhaustion, vomiting, purgation, and was progressive. The blood was apparently normal. The symptoms became worse in the summer and improvement was noted in the winter. The patient is being treated with suprarenal extract, with rapid improvement. The author has collected 43 cases of the disease that have been treated with suprarenal extract; of these, 13 were improved, nine recovered, 11 died, three showed no improvement, and the result was not recorded in seven. In answer to a question by Dr. Kinnicutt, Dr. Johnston stated that there had been slight enlargement of the liver, but no glycosuria. In answer to Dr. S. Weir Mitchell, he said that the temperature had been subnormal and that he had used nine grains of the suprarenal extract, three times a day. In answer to Dr. McPhedran, he said that at first the heart beat had been feeble and the tension low, but that later the heart beat had been stronger and the tension higher.

DR. WILLIAM H. WELCH, of Baltimore, read a paper entitled

VENOUS THROMBOSIS AS A COMPLICATION OF CARDIAC DISEASE.

Distinct venous thrombosis is not usually recognized as a complication of cardiac disease. He recorded four personal observations. In the first the patient was a woman, age seventeen years. She had aortic and mitral insufficiency. During the course of the disease hard edema of the left arm developed, and at autopsy adherent pericardium was noted and thrombosis of the innominate, the internal jugular, the external jugular, the subclavian, and the axillary veins of the left side. The oldest part of the thrombus was in the lower part of the internal jugular vein and in the innominate vein. Cultures from the body of this patient were sterile, except those made from the lung and the thrombus; these gave the streptococcus pyogenes. The second case was in the person of a woman, age thirty-five years, who was suffering from mitral stenosis. The left side of the neck became swollen in the line of the internal and external jugular veins; later the left arm also became swollen and a thrombosed axillary vein could be felt. The collateral circulation was established and the symptoms disappeared. Later the patient had an embolus lodge in the popliteal artery, from which she also recovered. The third case was that of a boy, age sixteen years, who had mitral and aortic insufficiency. The left arm became markedly edematous, and worse than the right, which was also swollen. The left axillary vein was thrombosed, as well as the lower part of the internal jugular vein. The boy died, but there was no autopsy. In the fourth case the patient was a man, age seventy-eight years. He had mitral insufficiency, with thrombosis of the left femoral vein, and recovered. Dr. Welch has collected from the literature 23 additional cases. The location of the thrombus was in the veins of the neck and the upper extremities in the majority of instances. In 23 cases in which the thrombosis affected the veins of the upper part of the body, 17 were in females, four were in males, in two the sex was not stated. The heart condition in 20 cases was a complication of mitral disease, and, since this form of heart disease is more common in females than in males, the preponderance of female patients in whom this complication occurred may be explained. The age at which the majority of cases occurred was between fifteen and thirty. Rheumatism, while the underlying cause of the heart disease, was probably not the cause of the thrombosis. In the majority of cases the thrombosis appeared during the failure of compensation. The veins of the left side were affected in 21 out of 23 cases. Usually the veins of both the neck and the arm were thrombosed. The case reported by the author is the only one in which micro-organisms were found. In one case, reported by Dr. Helen Baldwin, the mouth temperature was seven degrees lower than the rectal temperature. The prognosis is grave, mainly on account of the gravity of the cardiac condition. The more frequent occurrence of the thrombus in the left side may be explained by the anatomic condition of the veins, blood coming into a common receptacle from various angles, valves in the jugular veins that are frequently deficient, and the regurgitation of the blood into the great veins causing the whirling motion that favors clotting. The thrombus is probably of micro-organismal origin.

DR. KINNICUTT spoke of a similar case.

DR. CARY thought that dilatation of the left auricle might have an etiologic significance.

DR. BIGGS spoke of a similar case.

DR. WELCH said that a dilated left auricle would undoubtedly assist in determining the coagulation. Dilated pulmonary vessels, also, might have an etiologic significance.

DR. SIMON FLEXNER, of Philadelphia, read a paper on

THE NATURE OF THE NEW TISSUE IN CIRRHOSIS OF THE LIVER, AND ITS DISTRIBUTION.

Much of the new tissue in cases of cirrhosis of the liver is of the elastic variety. By digestion of sections with pancreatin, by which the cells and the elastic tissue are digested out, much new tissue, of the white fibrous variety, together with reticulum, is found. If the connective tissue and the reticulum are digested out the elastica may be left behind. In cases of atrophic cirrhosis the elastica is usually seen in the periphery of the lobules, although there is some slight extension into the lobule. In the hypertrophic form it follows along the capillaries into the lobule. The elastica appears to be developed from the other tissues and seems to come from the adventitia of the blood-vessels.

DR. F. C. SHATTUCK said that the pathologic findings do not seem to agree with the clinical features of the disease, because, clinically, there is one form in which the disease is seen in the portal spaces, atrophic form, and another in which the disease seems to be around the bile-ducts, hypertrophic form or cirrhosis with icterus, of the French.

DR. R. H. FITZ, of Boston, reported a

CASE OF CYSTOMA OF THE PANCREAS.

The tumor was a multilocular cyst of the pancreas. It seemed to be due to the formation of new fibrous tissue and the dilatation of the ducts with the production of new epithelium, both of the kind seen in the ducts and that seen in the acini of the gland. The cyst was removed and the patient is doing well.

DR. CHARLES CARY, of Buffalo, reported a case of

DEGENERATED ECHINOCOCCUS CYST OF THE PLEURA.

The patient had what seemed to be chronic pleuritis. He had always lived with dogs until the age of twenty-one years, but he had never been out of the United States. Palpation of the thorax revealed a rough, vibrating friction, and friction was heard on inspiration. Exploratory puncture brought a fluid containing cholesterin, albumin and sugar. Aspiration later brought one-half litre of fluid. At operation, a soft mass of collapsed cysts was removed, which proved to be degenerated echinococcus cysts. At first no hooklets were found, but later two hooklets were seen.

DR. ALFRED STENGEL, of Philadelphia, reported a case of

ANEURISM OF THE AORTA WITH RUPTURE INTO THE SUPERIOR VENA CAVA, RECOGNIZED DURING LIFE.

The patient was a man, age thirty years, who developed a murmur similar to that already reported in a similar case. The patient lived for twenty-four days and finally died in a convulsion. It is not beyond the range of possibility that recovery might ensue in such a case. Venesection may do as much harm as good in a similar case, because the overfilling of the vena cava and the equalizing of pressure on the two sides might allow the formation of a clot in the aneurism.

DR. BEVERLY ROBINSON, of New York, read a paper entitled

MINOR FORMS OF CARDIAC DILATATION.

Two classes of patients, particularly, are likely to present mild attacks of cardiac dilatation: (1) anemic girls just past the age of puberty, and (2) obese women, married or unmarried, between forty and fifty years of age.

DR. W. H. THOMSON, of New York, read a paper entitled

GRAVES'S DISEASE WITHOUT EXOPHTHALMIC GOITRE.

The specific symptoms of Graves's disease are (1) tachycardia, which is persistent and above 100. This symptom was absent in only two out of 67 cases; (2) nervous symptoms both sensory and motor; (3) gastric symptoms; (4) intestinal symptoms; (5) nutritive disorders; (6) death by syncope. Exophthalmos and goitre are not essential symptoms. The author thinks the source of the symptoms is not in the thyroid body, but rather that we should look for it in the alimentary canal.

DR. EDES said that one symptom that he had noted in Graves's disease was an uncomfortable sensation of heat.

DR. MCPHEDRAN called attention to the lack of sinking of the eyes with emaciation as indicating some slight exophthalmos.

DR. W. H. THOMSON had not noted the lack of relation between the emaciation and the sinking of the eyes.

DR. M. HOWARD FUSSELL, of Philadelphia, read a paper on

PERICHONDRITIS OF THE LARYNX IN TYPHOID FEVER, WITH EXHIBITION OF A PATIENT AND A SPECIMEN.

He showed the specimen from a fatal case and exhibited a patient who recovered after tracheotomy. This patient wore the tube for six months. The crico-aretenoid joint in this patient is anchylosed. The complication is rare.

DR. H. A. HARE, of Philadelphia, read a paper entitled

THE ATTITUDE OF THE PHYSICIAN AND SURGEON TO APPENDICULAR SYMPTOMS COMPLICATING TYPHOID FEVER.

There is great difficulty, in the early stages of acute disease in which there are symptoms that refer to the appendicular region, in diagnosing between appendicitis and typhoid fever. The author thinks that the absence of leucocytosis is an indication that a given case is not one of appendicitis. The absence of leucocytosis, however, is not pathognomonic.

DR. IRA VAN GIESON, of New York, read a paper entitled

OBSERVATIONS ON APPENDICITIS.

He thinks that the tortuous blood supply of the appendix predisposes it to undergo retrograde and obliterative changes. He thinks that the attacks of appendicitis are the result of the evolution of the species, providing for a race in which the appendix will be absent. Attacks of appendicitis are predisposed to by these obliterative changes. Acute appendicitis is not an accident but is a factor in natural selection. If the appendix was to be removed as soon after birth as is safe, the individual would probably be benefited, but the process of natural selection would be delayed.

DR. NORMAN BRIDGE, of Los Angeles, read a paper entitled

SOME OBSERVATIONS ON HUMAN TEMPERATURE IN DISEASE.

He thinks that a temperature of 102° is not dangerous. Free catharsis at the beginning of a fever may relieve the gut of ptomaines and thus benefit the condition; but it is doubtful that it reduces fever. He does not believe in the use of antipyretics or of aconite to reduce temperature, but thinks that the secret of treatment is pointed to by the results of the injection of antidiphtheritic serum.

DR. J. K. MITCHELL read a

STUDY OF A MUMMY AFFECTED WITH INFANTILE PARALYSIS.

The mummy had one leg shorter than the other with no sign of fracture. The pelvis was perfectly

formed and the vertebral column presented no sign of compensatory scoliosis. The author thinks that this indicates the wearing of a high-soled sandal. He thought that the defect in the development was due to a poliomyelitis, that might have been intra-uterine.

DR. ROBERT T. EDES, of Jamaica Plain, showed a

NEW MODIFIED SPHYGMOGRAPH.

The following papers were read by title: "The Existence of Bacteria in the Normal Tissues," Dr. G. J. Adami, for Dr. W. Ford, of Montreal; "Subpectoral Abscess," Dr. J. H. Musser, of Philadelphia; "Stone in the Kidney and Conditions Simulating It," Dr. D. D. Stewart, of Philadelphia; "The Circular Fibres of the Heart (Mitral Sphincter) as a Factor in Functional Disturbances of the Heart with Mitral Insufficiency," Dr. Morton Prince, of Boston; "Clinical Types of Uric-Acid Diathesis; Treatment; Completion of Paper," Dr. J. N. Danforth, of Chicago; "Sarcoma of the Stomach," Dr. George Dock, of Ann Arbor; "A Case of Multiple Fibromas of the Nerves with Arthritis Deformans," Drs. L. Hektoen and R. B. Preble, of Chicago; "Multiple Myeloma," Dr. J. H. Wright, of Boston; "The Urea Content of the Blood in Cases of Nephritis," Dr. J. S. Thacher, of New York; "A Study of 24 Cases of Typhoid Fever with Symptoms of Peritoneal Infection; Laparotomy," Dr. George B. Shattuck, of Boston, for Drs. George B. Shattuck, J. Collins Warren, and Farrar Cobb, Committee of the Boston Society for Medical Improvement.

Recent Literature.

A Practical Treatise on Diseases of the Skin, for the Use of Students and Practitioners. By JAMES NEVINS HYDE, A.M., M.D., and FRANK HUGH MONTGOMERY, M.D. Fifth and revised edition. Illustrated with 111 engravings and 24 plates in colors and monochrome. Philadelphia and New York: Lea Bros. & Co. 1900.

This well-known American text-book has now reached its fifth edition. New chapters have been added on porokeratosis and blastomycetic dermatitis, and a great many of the subjects have been carefully revised. Also twelve plates and two engravings have been added. The popularity of this excellent text-book is indicated by the fact that the previous edition was exhausted in less than two years.

International Clinics. A Quarterly of Clinical Lectures and Especially Prepared Articles in Medicine, Neurology, Surgery, Therapeutics, etc. By leading members of the medical profession throughout the world. Edited by HENRY W. CATTELL, A.M., M.D. Volume I. Tenth Series. Philadelphia: J. B. Lippincott Co. 1900.

This volume of this now well-known publication has so far altered in policy as to devote special attention to the more generally practical sides of medicine, rather than to lay stress merely on the unusual. The editorial staff has also undergone changes. The latter part of the volume is taken up with an epitome of the progress of medicine during 1899, and though, of course, not complete, is of distinct value.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, MAY 24, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.

FIRST REPORT OF THE MASSACHUSETTS STATE BOARD OF INSANITY.

THE first annual report of this State Board, which was organized for official business October 1, 1898, is a noteworthy document, which will, no doubt, have a wide bearing on the future policy of the State towards its insane. The first year of the Board's work was an arduous one, requiring a large number of meetings, and a painstaking investigation of institutions throughout the State, with the supervision of the twenty-four State, municipal and private institutions for the insane, feeble-minded, epileptic, dipsomaniac and inebriate. Among many reforms and suggestions, one of practical use to others as well as to those particularly concerned with the problems of insanity is the provision for uniform certificates for the commitment of the insane, the dipsomaniac or inebriate. These blanks, now in general use by the courts are printed and distributed at the expense of the Board. There is a concise discussion of the important matters regarding the relations of curable and incurable cases, and their separate treatment, and also of the question of the colony system for the chronic insane. The report makes a number of recommendations which we quote:

(1) Such legislation as will provide that all insane persons who are now, or may hereafter become, public charges shall be supported at the expense of the Commonwealth on and after January 1, 1904.

(2) That all such insane poor shall be committed according to the laws for the commitment of the insane to the custody and control of the authorities of the Commonwealth as soon after January 1, 1904, and in such a manner as may be deemed advisable by the State Board of Insanity.

(3) That all such insane poor shall be cared for in buildings which shall be owned or controlled by the Commonwealth.

(4) Such legislation as may be necessary to acquire for the State the land, the buildings and equipment in use by the Boston Insane Hospital.

(5) That a colony for the chronic insane should be established, according to the general plan outlined in this report.

(6) That the Legislature appropriate a sum not exceed-

ing $25,000, to be expended under the direction of the State Board of Insanity for the purchase of not less than 2,000 acres of land for such a colony.

(7) That the Legislature appropriate a sum not exceeding $50,000, to be expended under the direction of a board of trustees for the proper organization of such a colony, and toward the construction of buildings and the procuring of other equipment necessary for that purpose.

A large part of the volume is taken up with a series of brief reports from the various hospitals, and valuable statistical tables of the details of management. We repeatedly notice allusions to the good work being done by the pathologists, the greater care taken in the study and classification of disease, and the introduction of accurate hospital methods in place of methods which have too long characterized the medical work of institutions for the insane. There is ample evidence to show that this "asylum" period is past, and that our great insane hospitals, aided by a liberal-minded board of directors, will, in the near future, accomplish results commensurate with these possibilities.

THE TRANSMISSION OF SYPHILIS TO THE LOWER ANIMALS.

THE difficulty which has persistently stood in the way of an accurate knowledge of syphilis has been the impossibility of transmitting the disease to animals experimentally. Why this should be, when so many diseases of man may be with ease reproduced in animals, affords a problem which remains for the future to decide. For the present we must experiment with such means as we have at our disposal, in the hope that repeated investigation may lead to results of significance. It should, in such work, always be remembered that negative evidence is never worthless, and that through negative evidence not infrequently generalizations of importance may be made.

We have before us an interesting paper by Dr. Mazyck P. Ravenel, of Philadelphia, recently published in the *American Journal of the Medical Sciences*, in which the writer describes two very carefully conducted experiments on calves. As Ravenel says, the interest of such inoculation experiments lies not only in the scientific evidence they may bring regarding the main problem, but also as setting at ease the minds of those often well-meaning but misinformed persons who apprehend dangers from syphilitic infection in the operation of vaccination. In fact the agitation against vaccination in Philadelphia and Pennsylvania, and the unwarranted assertions of certain physicians regarding the dangers of syphilitic infection from animals used in the preparation of the virus, led to the work under discussion.

It has been claimed that certain of the lower animals, especially the domesticated animals and monkeys, have been successfully inoculated, claims which need, however, further substantiation. Of seventy inoculations, in which rabbits, dogs, guinea-pigs and apes were used, Duplan in 1884 had absolutely negative results with the exception of two rabbits, in which there is considerable evidence to show that the transmitted disease was tuberculosis and not syphilis.

The recent experiments done by Ravenel were with two calves, a species of animal in which no claims for successful inoculation have been made. The material for the inoculations was obtained from a mucous patch on the lip and a sore about the genitals of a venereal patient, the case being in an early secondary stage. The inoculations were made two and a half hours after the material from the sore was obtained. The technique of inoculation is given in the words of the author as follows: "The area selected was shaved, washed thoroughly with soap and water, and well rinsed with sterile water, after which a surface about the size of a silver half-dollar was scraped with a sharp scalpel until a slightly bloody serum began to exude. It was next scarified with the ordinary scarifier used in vaccination, in two directions at right angles to each other, and into this the syphilitic material was rubbed for not less than five minutes. A second scarification was then done, and the animals kept down until the surface had dried."

The following day the scarified areas were covered with a thin scab, surrounded by a small inflammatory zone. By the fifth day the scabs had dropped off and the animals showed no signs of discomfort whatever. At the autopsies, made respectively fifty-four and one hundred and thirty-eight days after inoculation, absolutely nothing was found pointing to syphilis, even the areas of inoculation being no longer discoverable. The animals were, however, slightly tuberculous, which in no way vitiates the significance of the experiment, but rather adds to its value, since the presence of tuberculosis is thought to increase the susceptibility to syphilis. The nervous system likewise showed no alterations. As a result of his work Ravenel is inclined to the opinion, already expressed by Neumann, that it is impossible to transmit syphilis to the lower animals, a fact which should do much to relieve the solicitude of the opponents of vaccination.

MEDICAL NOTES.

PLAGUE IN SAN FRANCISCO. — It has been definitely determined by the San Francisco Board of Health that bubonic plague exists in the Chinese quarter, and measures are being taken to prevent its spread. A strict quarantine has been instituted and both prophylactic and curative serum employed. On March 8th Surgeon Kenyon reported that a suspicious case had died in Chinatown, and on March 11th that he had found plague bacilli. On April 27th another case occurred, verified by bacteriological examination, and so reported on May 2d. On May 15th there were two deaths from plague. May 16th another case was reported. There have been six deaths, and, so far as known, the disease has appeared only among the Chinese. Dr. W. H. Kellogg, City Bacteriologist of

San Francisco, writes as follows in the *Journal of the American Medical Association:* "I am of the opinion that the thorough disinfection and cleaning up of the Mongolian quarter, which the San Francisco Board of Health has been carrying out with considerable vigor, has been of invaluable service in checking the spread of the disease before it had fairly gained a foothold. Vigilance should not yet be relaxed in the least, for it would not be surprising if other cases were discovered in the near future. In such event the measures taken will have to be most radical, for the reappearance of the pest will be evidence that a focus of infection has been established which nothing short of fire will obliterate."

THE PROFESSORSHIP OF MEDICINE IN EDINBURGH. — Dr. John Wylie was elected to the chair of medicine in Edinburgh University, May 4th. He is fifty-sixy ears of age, and has had a wide experience in teaching. In 1897 he received the degree of LL.D. from the University of Edinburgh. During the illness of the late Sir Thomas Grainger Stewart, Dr. Wylie was appointed to discharge the duties of the chair. His chief publication is a book entitled "The Disorders of Speech," which appeared in 1894.

ADMISSION TO THE PARIS EXPOSITION FOR MEMBERS OF THE MEDICAL CONGRESS. — Dr. H. B. Jacobs, Secretary of the American National Committee of the Thirteenth International Medical Congress, informs us that during the week of the International Medical Congress, August 2d to 9th, free admission to the Paris Exposition will be granted to members of the Congress. To secure this, members will receive a special card by applying to the office of the Congress, 21 Rue de l'École de Médecine.

DEDICATION OF NEW LIBRARY BUILDING OF THE MEDICAL SOCIETY OF THE COUNTY OF KINGS. — The dedication of the new library building of the Medical Society of the County of Kings was held at 1313 Bedford Ave., Brooklyn, N. Y., Saturday, May 19, 1900. Addresses were made by Drs. George M. Gould, James R. Chadwick and Abraham Jacobi, followed by the formal transference of the building to the Society.

NO YELLOW FEVER IN MANILA DURING APRIL. — A report from Major W. C. Gergar, of the medical corps, chief sanitary officer of Manila, states that while the death-rate for April was 482, there were no deaths from yellow fever, the first month so favored since May, 1899, and the only month when there were no deaths from this disease during the past ten years with two exceptions, February and May, 1899.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, May 23, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 74, scarlatina 58, measles 114, typhoid fever 17.

EPIDEMIC OF TYPHOID FEVER AT FORESTVILLE, CONN. — In the *Monthly Bulletin* of the State Board of Health of Connecticut for April, Dr. C. A. Lindsley, Secretary of the Board, gives the following preliminary account of the successful search for the cause of the recent epidemic of typhoid fever at Forestville: "The water supply common to all the patients is a spring from which the water is pumped and distributed to the people of the village. A small river separates the spring from the pumping station, and two supply pipes are laid in the river through which the pump draws the water to discharge through the distributing pipes. On examination, Dr. Smith, the investigating officer, found that one of these supply pipes had been accidently broken quite in two, probably by collision with some floating object in the freshet of March 1st, so that the water pumped through it was wholly river water. In consequence of this, the pump was delivering to the distributing pipes a mixture of spring and river water. This fact was discovered by working the pump after closing the connection with the spring, and afterwards finding the fractured ends of the pipe. Samples of water were taken from the three sources, the spring, the distributing pipes, or mixed water, and the river water as pumped through the broken pipe. Analyses of each have been made. The river water is of course polluted more than the others, but that from the distributing pipes showed sewage contamination by chemical tests, and bacteriologically, by the presence of intestinal microbes. The source of this contamination was not far to find. About 300 feet above the broken pipe is situated a factory, employing about 200 operatives. In this factory are twenty-six water closets and six urinals, discharging into this river. Reports of 35 cases, six of which were fatal, have been received at this date."

CHANGES IN REGULATIONS OF THE BOSTON BOARD OF HEALTH. — After May 15th the following changes took effect: (1) Pulmonary and laryngeal tuberculosis are now included in the list of diseases of which compulsory notification is required. After removal or death of the patient, the Board of Health will disinfect the premises. (2) Release of diphtheria cases from isolation is now granted only on receipt of two consecutive negative cultures from the nose and two consecutive negative cultures from the throat of each patient; a culture from the throat for release must always be accompanied by a culture from the nose, and *vice versa*, until release is granted. (3) Free examinations are made at the Laboratory of the Board of Health (607 Sudbury Building, corner of Sudbury and Hawkins Streets, Boston) for physicians in the following: Tuberculosis, diphtheria, typhoid fever, influenza and other bacterial diseases and malaria. For veterinarians, free examinations in glanders and rabies are made. Outfits for tuberculosis, diphtheria, typhoid fever and glanders may be obtained at a large number of drug stores throughout the city and environs.

BOSTON SOCIETY OF MEDICAL SCIENCES. — At a meeting of the Society held May 15th papers and

communications were presented as follows: Dr. R. W. Lovett spoke on "Movements of the Normal Spine in their Relation to Scoliosis," being the general results of an experimental investigation. Dr. F. P. Graham described a number of improvements in laboratory methods. Mr. W. R. Brinkerhoff and Dr. A. W. Balch reported an investigation on the pathology and probable cause of azoturia, the preliminary conclusion being that lead is the probable etiological factor. Dr. Allen Cleghorn read a paper on "The Physiological Effects and the Nature of Extracts of Sympathetic Ganglia."

AN IMPORTANT LEGAL DECISION. — A plaintiff seeking damages for personal injuries has recently claimed that much of his disability was due to the effect of the medical examination made by the corporation physician. The full bench of the Supreme Court in returning a verdict for the defendant held that even if the act of the physician did cause trouble, it did not render the railway company liable, the physician being an independent contractor, for whose acts defendant was not responsible.

NEW SURGICAL BUILDING FOR NEW ENGLAND HOSPITAL. — Appropriate exercises were held Saturday, May 19th, at the New England Hospital for Women and Children, Dimock St., Roxbury, on the occasion of the opening of the new surgical building, the corner stone of which was laid June 27, 1899.

BEQUESTS TO HOSPITALS. — By the wills of the late J. N. and Harold Brown bequests are made, among others, to the following institutions: Rhode Island Hospital, $54,000; Butler Hospital, $50,000; Newport Hospital, $33,000.

A CASE OF SMALL-POX IN BOSTON. — Another case of small-pox has been reported from a house in which two cases have already occurred. Strict precautions are being taken to prevent any possible spread of the disease.

INDICTMENT OF FRANCIS TRUTH. — Francis Truth, the so-called "divine healer," whose arrest we noted some weeks ago, has been indicted by the grand jury on twenty counts.

A CENTENARIAN. — Mrs. Lucy Davis, of Auburn, Me., has recently died at the reputed age of one hundred and six. It is claimed that her mother attained an equal age.

NEW YORK.

MORTALITY STATISTICS. — In comparing the mortality of the city for the four weeks ending April 28th with that of the four weeks ending March 31st, it is found that the death-rate in April was 22.87, against 24.09 in March. There was, indeed, a gratifying and progressive decrease in the death-rate from the week ending March 10th, when it reached the high figure of 25.31, to the week ending April 28th, when it was 21.96. Still, throughout the present year, the death-rate has been considerably higher than in 1899, when the mortality was exceptionally small. Thus, in the corresponding weeks of March and April last year the death-rate was only 18.61 and 18.88 respectively. One very important element in the increased mortality of the present year has been the excessive fatality of pneumonia, which in the first quarter is credited with 2,486 deaths, against 1,654 in the first three months of last year. At the same time the number of deaths from influenza, aside from pneumonia, in the first quarter of 1900 was only 221, against 267 in the corresponding period of 1899. The climax in the mortality from pneumonia was reached in the week ending March 10, 1900, when it caused 455 deaths, or more than one-fourth of the total mortality of the city. In April of the present year the weekly average of deaths from pneumonia was 359, against 394.5 in March. The weekly average of deaths from influenza declined from 49.75 in March to 36.75 in April, and the deaths from bronchitis, from 68.75 in March to 58 in April. There was but little change in the number of deaths from diphtheria, scarlet fever, measles, whooping-cough and typhoid fever, but the weekly average of deaths from pulmonary tuberculosis increased from 178.5 in March to 193 in April. Excluding the Borough of the Bronx, in which the mortality is usually disproportionately high, on account of the large institutions located there, we find that the largest mortality reported in any of the boroughs during April was in Richmond, in the week ending April 7th, when it represented an annual death-rate of 27.12. The smallest was in the same week in the Borough of Queens, where the death-rate was 20.25.

A VERDICT FOR NEGLECT. — Miss Helen D. Ward, a sister-in-law of Judge Henry E. Howland, at a third trial in Supreme Court, has just obtained a verdict for $10,000 in a suit for $30,000 damages against St. Vincent's Hospital which was commenced several years ago. In February, 1894, she took a private room at the hospital for one week, at the rate of $25, with $3.00 a day additional for the services of a skilled nurse. An operation was performed on her right leg by the late Dr. Wm. T. Lusk, assisted by Dr. Hughes, the house surgeon. In consequence of a hot-water bag being left in contact with the wound by the nurse in charge, while she was still under ether, she suffered from burns which were not healed for two years and which permanently disabled her. The suit came to trial in the Supreme Court in 1898 before Judge Cohen, who directed a verdict for the defendant, on the ground that the hospital was a charitable institution, and, accordingly, not liable for negligence of employés. This ground had been taken in decisions handed down in Massachusetts and Pennsylvania. They were based on an English case which, it is said, has since been reversed by the House of Lords. Miss Ward appealed, and in April of last year the Judges of the Appellate Division, in a unanimous opinion, ordered a new trial, holding that although the hospital was in part a charitable institu-

tion, it had also a department for pay patients, and that as the action was brought not on the ground of negligence, but for alleged breach of contract, the case should have been tried. A second trial was accordingly held in December last, and at this trial there was a disagreement of the jury.

MEDICAL ASSOCIATION OF THE COUNTY OF NEW YORK NO LONGER INDEPENDENT. — At a special meeting held May 11th, the Medical Association of the County of New York voted away its independence by adopting a resolution dictated by the Council of the State Medical Association, by which it is constituted a subordinate county association of the State Association, and binds itself to obey the laws, rules and regulations of the latter.

ARMY NOTES.

ASSOCIATION OF MILITARY SURGEONS.— The coming meeting of the Association of Military Surgeons at New York City, May 31st to June 2d, presents an interesting programme in spite of the fact that so large a number of the members of the Association are now serving at foreign posts and are not in position to give this meeting their active support. A number of papers have already been received by the secretary. The headquarters of the Association will be at the Murray Hill Hotel; the meetings at the New York Academy of Medicine. The social programme includes visits to the various army and navy stations around New York, together with the usual dinner. It is understood that the business meeting of the Association will be unusually interesting, through efforts to be made to increase the membership and value of the society, especially through its official organ.

NO PLAGUE AT HONOLULU.— Surgeon-General Sternberg has received a report from Major B. D. Taylor, the chief medical officer of the Hawaiian Islands, dated April 27th, in which he states that there have been no cases of bubonic plague since March 31st, and that if none occurred in the interval the quarantine at Honolulu would be raised April 30th.

SANITARY AFFAIRS AT HAVANA.— A recent issue of the *Havana Post* compliments Major W. C. Gorgas, Surgeon, United States Army, on his administration of sanitary affairs in that city.

Miscellany.

PRESERVATIVE QUALITIES OF HYDROCHLORIC ACID.

DURING a discussion on "Internal Antisepsis" at a meeting of the Medical Association of the Greater City of New York, held May 14th, Dr. George B. Fowler mentioned, as illustrating the remarkable preservative qualities of hydrochloric acid, that the late Prof. John C. Dalton was accustomed for many years to exhibit before his class at the College of Physicians and Surgeons the digestive power of a specimen of the gastric juice of the dog which he extracted in the year 1865. In 1868 Dr. Fowler became his assistant, and for the ten years that he remained in this position this was annually demonstrated to the students. The original specimen consisted of eight ounces of gastric juice. Being somewhat curious to know whether this interesting specimen was still in existence, Dr. Fowler recently wrote to Prof. John G. Curtis, Dr. Dalton's successor in the chair of physiology at the College of Physicians and Surgeons, and received the following reply:

NEW YORK, April 27, 1900.

DEAR DR. FOWLER: — I still show a bottled specimen of dog's gastric juice obtained by Dalton in 1865, as the label, in his handwriting, shows. This is dark brown and has a sediment, but it is not decomposed. I have never tested it in any way, but it does not change in its appearance from ten years to ten years. Specimens I myself withdrew from dogs over twenty years ago are still acid. I filter them from time to time, but they seem "sweet," although what I suppose are cryptogamic growths of some kind spring up in them. I have not tested the digestive powers of these old specimens, but they do not change, as specimens, except as indicated.

JOHN G. CURTIS.

Correspondence.

NOTE ON X-RAY EXAMINATIONS OF THE LUNGS.

BOSTON, May 18, 1900.

MR. EDITOR: — In making examinations of the thorax with the x-rays I have observed in some patients that the excursion of the diaphragm was limited and low down in the chest on one or both sides, as in emphysema, and yet the lungs were not unusually clear, as is the case in this disease, but were of normal brightness or darker than normal. A second x-ray examination made after an interval of some days showed that the lung or lungs were brighter and that the excursion of the diaphragm had much increased. The explanation of these appearances which offers itself is partly suggested by the appearances seen in other patients where the conditions are known. For instance, I have observed that the diaphragm was low down in the chest, and that its excursion was limited in cases where the passage of the air through a bronchus was obstructed by a foreign body or by the pressure produced by a new growth upon the bronchus or the trachea. In such cases there is more difficulty in getting a large part of the air out of the lungs than in getting air into the lungs. It seems probable, therefore, that in the cases we are considering the presence of considerable mucus had obstructed the passage of the air through the smaller air passages — abundant rales were noted as in bronchitis — and that this obstruction caused the diaphragm to be lower down and more restricted in its movement than normal; and that the excessive secretion, accompanied probably by congestion, made the pulmonary area less bright than in health. Or the excursion of the diaphragm might be temporarily increased by the expulsion of the mucus from the lungs when the patient coughed, and decreased as the mucus again collected. Naturally, if this explanation is correct, as the conditions improved the excursion of the diaphragm would increase, and the pulmonary area would become brighter. Thus by observing the lungs and diaphragm we may get appearances that have their cause in the air passages rather than in the alveoli or the lung itself.

Truly yours,

FRANCIS H. WILLIAMS, M.D.

METEOROLOGICAL RECORD

For the week ending May 12th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		Weather. *		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S....6	30.03	50	60	39	40	48	S.W.	W.	8	12	F.	O.	
M...7	30.39	49	60	38	52	30	41	N.W.	N.W.	10	6	F.	C.
T...8	29.88	54	67	42	64	90	77	S.W.	S.W.	19	14	O.	O.	.06
W...9	29.63	57	75	39	65	69	67	S.W.	N.	18	15	F.	O.	.26
T...10	30.01	42	49	34	78	54	66	N.W.	N.	13	10	C.	C.	
F...11	30.00	48	62	33	62	65	64	W.	S.W.	12	12	F.	F.	
S...12	30.06	52	63	42	66	62	64	E.	S.	4	8	C.	C.	

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☞ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MAY 12, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Typhoid fever.	Diphtheria and croup.
New York	3,654,574	1353	442	23.03	19.18	.84	.91	3.51
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	—	—	—	—	—	—	—
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	203	59	21.50	15.50	1.50	1.50	3.50
Baltimore	506,389	2 2	44	19.00	15.50	2.00	1.50	2.50
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	303,000	114	38	17.60	—	3.52	5.28	3.52
Washington	277,000	—	—	—	—	—	—	—
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	66	15	18.24	18.24	3.04	1.52	—
Nashville	87,754	—	—	—	—	—	—	—
Charleston	65,165	36	15	22.16	5.54	5.54	—	—
Worcester	111,732	37	16	18.90	18.90	2.70	—	—
Fall River	103,142	—	—	—	—	—	—	—
Cambridge	92,520	24	6	33.33	16.66	—	—	4.16
Lowell	90,114	36	7	11.08	11.08	—	—	—
New Bedford	70,511	21	3	4.76	19.04	4.76	—	—
Lynn	68,218	18	2	16.66	—	—	—	—
Somerville	64,394	15	3	20.00	20.00	—	—	—
Lawrence	59,072	46	24	32.55	13.02	4.34	—	2.17
Springfield	58,266	22	4	12.45	37.35	—	—	—
Holyoke	44,510	18	6	38.88	16.66	—	—	—
Brockton	38,759	—	—	—	—	—	—	—
Salem	37,723	11	3	9.09	—	—	9.09	—
Malden	36,421	6	1	16.66	—	—	—	—
Chelsea	34,235	11	1	9.09	—	—	—	9.09
Haverhill	32,651	7	1	28.56	14.28	14.28	—	—
Gloucester	31,428	4	—	25.00	—	—	—	—
Fitchburg	30,523	11	4	18.18	9.09	—	—	9.09
Newton	30,461	7	1	14.28	14.28	—	—	—
Taunton	28,527	9	2	—	11.11	—	—	—
Everett	28,102	7	2	—	14.28	—	—	—
Quincy	24,578	7	3	14.28	—	—	—	—
Pittsfield	23,421	1	—	—	—	—	—	—
Waltham	22,791	—	—	—	—	—	—	—
North Adams	21,583	5	—	20.00	20.00	—	—	—
Chicopee	18,316	5	3	—	—	—	—	—
Medford	17,190	6	3	—	—	—	—	—
Newburyport	15,636	5	—	—	—	—	—	—
Melrose	14,721	1	—	—	—	—	—	—

Deaths reported 2,231; under five years of age 719; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 519, acute lung diseases 402, consumption 299, diphtheria and croup 72, diarrheal diseases 33, typhoid fever 27, whooping-cough 24, scarlet fever 23, measles 22, erysipelas 12, cerebrospinal meningitis 7.

From whooping-cough New York 20, Pittsburg 3, Somerville 1. From scarlet fever New York 12, Boston 3, Worcester and Lawrence 2 each, Pittsburg, Providence, Holyoke and Pittsfield 1 each. From measles New York 14, Lawrence 4, Boston 2, Pittsburg and Holyoke 1 each. From erysipelas New York 9, Providence, Charleston and Holyoke 1 each. From cerebrospinal meningitis Boston and Baltimore 2 each, New York, Worcester and Holyoke 1 each.

SOCIETY NOTICES.

ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES. — The ninth annual meeting of the Association will be held May 31st, June 1st and 2d, at the Academy of Medicine, New York City.

MEETING OF BOARDS OF HEALTH OF NORTH AMERICA. — A conference of the State and Provincial Boards of Health of North America will be held in Atlantic City, N. J., June 1st and 2d, being the fifteenth annual meeting.

RECENT DEATHS.

ALFRED H. LINDSTRÖM, M.D., died May 17th, at the Massachusetts General Hospital, of pneumonia. He was born in Kalmer, Sweden, March 21, 1869, came to America in 1888, entered the Harvard Medical School in 1891 and received his degree in medicine in 1894. Since then he has practised medicine in and about Boston.

CHARLES HERBERT VOORHEES, M.D., of New Brunswick, N. J., died on May 13th. He was born in New Brunswick, August 3, 1824, and was graduated from Jefferson Medical College, Philadelphia, in 1850. During the Civil War he was a surgeon in the army and was confined for a time in Libby Prison. He was the author of a number of scientific and historical papers.

BOOKS AND PAMPHLETS RECEIVED.

Fifth Annual Report of the Metropolitan Water Board, January 1, 1900. Boston: Wright & Potter Printing Co. 1900.

Non-Malignant Gastric and Duodenal Ulcers: With Illustrative Cases. By Thomas E. Satterthwaite, M.D., New York. Reprint. 1900.

Hand Atlas der Anatomie des Menschen, in 750 Theils, farbigen Abbildungen mit Text. Von Werner Spalteholz. Dritter Band, I Abtheilung. Leipsig: S. Hirzel. 1900.

Transactions of the Twenty-first Annual Meeting of the American Laryngological Association, held in Chicago, Ill., May 22, 23 and 24, 1899. New York: D. Appleton & Co. 1900.

Atlas der normalen und pathologischen Anatomie in typischen Röntgenbildern. Die angeberene Luxation des Hüftgelenkes. Von Geh. Med.-Rat Professor Dr. Max Schede. Hamburg: Gräfe & Sillem. 1900.

Remarks on Nephrectomy, with a Plea for the more Certain and Earlier Diagnosis of Conditions Requiring It. Remarks on Extra-uterine Pregnancy. By Charles P. Noble, M.D., Philadelphia. Reprints. 1899-1900.

Diseases of the Intestines: A Text-Book for Practitioners and Students of Medicine. By Max Einhorn, M.D., Professor of Medicine, New York Post-Graduate Medical School, etc. New York: William Wood & Co. 1900.

The Treatment of Fractures. By Charles Locke Scudder, M.D., Surgeon to the Massachusetts General Hospital, Out-Patient Department, etc. Assisted by Frederic J. Cotton, M.D. Philadelphia: W. B. Saunders. 1900.

Chemistry and Physics: A Manual for Students and Practitioners. By Walton Martin, Ph.B., M.D., and William H. Rockwell, Jr., M.D. Edited by Bern B. Gallaudet, M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co.

A Treatise on Nasal Suppuration or Suppurative Diseases of the Nose and Its Accessory Sinuses. By Dr. Ludwig Grünwald, of Munich. Translated from second German edition, by Wm. Lamb, M.D., M.C., M.R.C.P. (Lond.). Illustrated. New York: William Wood & Co. 1900.

Microscopical Studies in Pelvic Peritonitis. Diagnosis and Some of the Clinical Aspects of Gyroma and Endothelioma of the Ovary. The Third Hitherto Undescribed Disease of the Ovary: Myxomatous Degeneration. The Fourth Hitherto Undescribed Disease of the Ovary: Colloid Degeneration. By Mary A. Dixon Jones, M.D., F.R.M.S., New York. Reprints. 1892-99.

International Clinics: A Quarterly of Clinical Lectures and Especially Prepared Articles on Medicine, Neurology, Surgery, Therapeutics, etc., and other Topics of Interest to Students and Practitioners. By leading members of the medical profession throughout the world. Edited by Henry W. Cattell, A.M., M.D., John Ashhurst, Jr., M.D., LL.D., and Charles H. Reed, M.D., Philadelphia, and James T. Whittaker, M.D., LL.D., Cincinnati, etc. Vol. I, Tenth Series, 1900. Philadelphia: J. B. Lippincott Co. 1900.

Original Articles.

THE INDUCTIVE METHOD APPLIED TO MEDICINE.[1]

BY C. W. ELIOT, LL D.,
President of Harvard University.

This discussion is one very interesting to me. In the first place, it carries me back about thirty years to the time when Professor Langdell first came to Cambridge to teach law. I had something to do with that myself; it was largely owing to the statements I had heard him make as to the proper method of teaching law. He described that method in a way which inevitably commended it strongly to a man who had been brought up as a chemist. Professor Ames spoke of it just now as the inductive method. That is exactly what it is. It is the method of inductive reasoning applied to law; and that is what Mr. Cannon's method is applied to medicine. It is simply the universal method of scientific induction. Professor Langdell got his facts from recorded cases, and then studied in those recorded cases the induced generalization or principle, which is precisely what a chemist does when he experiments in the laboratory — he gets his facts by accurate observation and record, and then endeavors to deduce the true principle therefrom. Now that method of teaching law has absolutely come to prevail in this country and is going to range wider and wider, — and we shall shortly get some rather conspicuous demonstrations of that fact, — it is going to prevail in the English speaking world. The reason is that the method is of universal application. Now Mr. Cannon advocates the use of cases in medicine in a strictly analogous manner. The method he has described seems to have a further recommendation. It enables a vast number of cases to be utilized for the instruction of students — not only those cases that are to-day visible in the Massachusetts Hospital and the City Hospital, but all recorded cases of value for teaching, just as the law reports enable a selection from all recorded cases to be used for instruction in the law. It is obvious, however, that in this multitude of recorded cases the skilful teacher is going to make a careful selection. That is exactly what Professor Langdell and Professor Ames have done for the teaching of law; they have selected the important cases and put them in a just sequence; and that, I think, will be necessary in order to introduce successfully the case method of teaching into medical teaching — otherwise the instruction will not be sufficiently systematic and comprehensive. The old-fashioned lecture system might claim this advantage, that in a defined course of lectures, a prescribed field could in some measure be covered. It might be covered in a condensed way, to be sure, but still something could be said about every important topic within the field. To be sure nobody may have listened to the lectures or remembered what was said; but the lecturer had at least endeavored to make his instruction systematic and comprehensive. That must be done in the case method, or it will fail. Of course it can be easily done; it requires nothing more than the same insight and good judgment which have been applied to the compiling of select cases in law.

The method of medical teaching which has been talked about to-night is after all nothing peculiar to medicine. It is simply the universal effort in education rightly directed. So far as I have been able to see, education in general, beginning in the kindergarten and ending in the university, comprehends just three things. First, accurate observation. That is the foundation of everything, and not in medicine peculiarly, but in all training. All exact training must begin with exact observation. Now primary school education used to omit that altogether. There was no training in accurate seeing, hearing and handling. We get more and more of it of late, but not enough. The next thing is an exact record. That is absolutely essential in medicine. It should be considered absolutely essential all the way along, beginning in the kindergarten — to see straight and then to make an accurate record of what you see. Every child should be taught that from the first moment it is old enough to go to school. Next should come the exactly limited inference from recorded facts — the most important thing in medicine, and a thing which to most human beings is so unfamiliar as to be strange. Hardly any of us really draw in most cases of observation and record the really true limited inference. We generally draw a much wider inference than the observation and record justify. So this method in medical teaching is the universal, the true method in all teaching, which is a good reason for believing that it will succeed in medicine.

We did not use to have much of it in medical teaching. I think it was thirty-five years ago that I was a lecturer in the Harvard Medical School for one winter; at that time lectures began in the school on North Grove Street at eight o'clock in the morning and went on steadily till two o'clock — six mortal hours, one after the other, of lectures, without a question from the professor, without the possibility of an observation by the students, with no interchange of thought between teacher and student, none whatever, just the lecture to be listened to, and possibly to be taken notes of. Some of the students could hardly write, so that the taking of notes was difficult for them. Can you imagine such a misapplication of force as that? It seems as if it must have been contrived before the invention of printing; but it was still going on centuries after that invention. We have got a good way from that now; and I would not have you suppose that there were not some good doctors made in those days. There were, by a kind of miracle, and not in the lecture-room.

But lectures have some function still. They linger much more in the medical school than in any other department of the university. There is a great deal larger proportion of simple lecturing in the medical school than in any other branch of the university. You may say that there is no plain, unadulterated lecturing in the law school, or in the graduate school, and hardly any in the college; the lecture is mixed with question and answer, with what is called conference — that is, interchange of views between the instructor and the students in small groups, or between his assistants and the students — and with the writing of themes and theses. But still the lecture has a function. It may be useful in giving a preliminary sketch or outline of the subject, or information about a course which is to go on in quite another manner through a year or half-year. It is useful sometimes in summing up the impressions of fifty minutes in the last five

[1] Remarks at a meeting of the Boston Society for Medical Improvement, March 5, 1900.

minutes; then, of course, it is but a short lecture. It is useful when accompanied by active demonstration, the teacher showing the class something which he describes. The lecture therefore will remain, but in much briefer forms and used to a much smaller degree.

As to the small-group or section instruction, that again is an immense improvement over any means of instruction at the bedside or the operating table which used to prevail in the school twenty and thirty years ago. It is simply a means of enabling the individual student to see and hear and touch for himself; and I do not know how the medical art can be acquired without abundant opportunities to see, hear and touch for one's self under the best possible scientific guidance.

And now that I have an opportunity of talking to a number of physicians and students I will avail myself of it to express the belief that another improvement should be made at once in preparatory medical education. I look over what have been the requirements for admission to the medical school, and I marvel to see that no previous study of any animal has ever been required. I look at the coming requirements, and see that degrees are required before admission to the medical school, and that care has been taken to prescribe that any degree which admits to the school without examination must cover chemistry. Now, is not it remarkable that no provision whatever is made for zoölogy, that no provision is made that the students shall have the least knowledge of any animal whatever? Is it not remarkable that medical students as a rule begin to use the scalpel on the human body? I do not know how any systematic arrangement could be less judicious than that, and yet it has been the universal practice all the world over so far as I know. Is it not strange that a man should be supposed to have been educated well in medicine, and to be actually ready to practise on the human being, who never has practised on an animal, and does not know anything about the diseases of animals, except what he may have picked up incidentally because he liked horses or dogs? I venture to say that this is the line of greatest possible improvement in medical education, the previous study and the simultaneous study of animals in health and disease. We have found out that diseases are pretty well mixed up between animals and man; we know that the sources of some diseases that afflict human beings are to be found in animals; and that some diseases are transmitted through animals to man; and also we know happily that we can get treatment for some human diseases out of animals. I cannot but think, therefore, that we should take immediate steps to improve the training preliminary to medicine in this respect, and that we should also do well to secure to the medical student a comparative study of medicine in other animals as well as in man.

I think the changes lately made in the medical school may be said to have already proved that it is best in medical study to treat the several subjects only two at a time, and to have the instruction in those two blocked, that is, concentrated into half a year, five or six times a week. A demonstration of the advantages of that method has already been given.

It is obvious that we need in medical education to make use of every possible means of improving our instruction and condensing it into as short a period as possible; for the number and variety of things to be learned is always increasing, and it looks as if the four-year period for medical study would not long suffice, unless we succeed in improving our methods and condensing the instruction. Improved method, of course, means a shorter time required to accomplish the task before one, and condensation and improved method may enable us to avoid the evil of requiring more time for medical study. I am glad to believe that time is to be saved in the period which precedes medical education. We have already a promising outlook at Cambridge in that regard; but we cannot hope to reduce the time of medical study proper below four years, and if we do not succeed in improving our methods, four years will not long suffice. We need, therefore, to exert ourselves in every direction to make these improvements; and I am glad to think that our medical school is pointing out the way.

THE COURSE IN PATHOLOGY AT THE HARVARD MEDICAL SCHOOL.[1]

BY WILLIAM T. COUNCILMAN, A.M., M.D., BOSTON,
Shattuck Professor of Pathological Anatomy.

At the beginning of the present school year certain important changes were made in the arrangement of studies in the Harvard Medical School. The entire curriculum of studies in the first and second years was rearranged and one of the large lecture-rooms on the third floor of the school building was converted into a laboratory. It was believed (1) that better results in teaching would be secured by concentrating the attention of the student on one subject until proficiency in that subject was attained; (2) that there was a natural sequence in the primary fundamental medical subjects which should be followed. It has been the general experience of men engaged in special study that the greatest progress is made by concentration. The knowledge gained in one day's work is still fresh when the work of the following day is taken up, and in every good system of education all new knowledge is made dependent on that which has preceded. Languages are acquired with much greater facility by the study of one language at a time. An object lesson, showing the value of concentration in the study of pathology was given in the success of the summer course on this subject given by Dr. Mallory. In this course the student gave his entire time to the subject for seven weeks, and in that time seemed to gain much more than the students in the ordinary course continued during the year. The experience in the summer schools in Cambridge has been the same. Such a system of concentration would probably not give the best results in very narrow subjects of study, but the fundamental medical subjects of anatomy, physiology and pathology are broad and diversified. In anatomy the student may divide his time between general anatomy, histology and embryology; in physiology, between general physiology and physiological chemistry; and in pathology, between bacteriology and general and special pathology.

The proper sequence of study necessarily follows the system of concentration. The student on first entering the school studies anatomy, which gives him the development, form and structure of the human body; the entire first term is devoted to this subject

[1] Read at a meeting of the Boston Society for Medical Improvement, March 5, 1900.

Physiology, or the study of function, follows and occupies the second term. In the first term of the second year the student studies pathology and bacteriology, which give him the alterations in form and structure; the agencies which produce these changes and the manner in which they act, and the effect of these changes or lesions on function. In the second term of the second year the student takes up those studies, such as physical diagnosis, medical laboratory work, etc., which have a direct bearing on the purely clinical studies to which the third and fourth year are devoted. The end attained by this system is that the student is not required to memorize a number of facts, or supposed facts, with little or no co-ordination between them, but every subject is made dependent on that which has preceded; this gives him as it were a series of pegs on which to arrange and co-ordinate any new knowledge. The study of the functions of organs is directly dependent on a knowledge of their form, structure and relations. It would be impossible to give any idea of the physiology of the brain without a knowledge of its anatomy. The study of the pathology of the circulation is impossible without a knowledge not only of the form and structure of the heart and blood vessels, but of the physiology of the circulation, including blood pressure, the conditions influencing it, etc. In the study of malformations and tumors we have constantly to refer to embryology.

At first sight it might seem possible to carry such a system of concentration and sequence to a still greater extent, that the form, structure and function, and the disorders of form, structure and function of a single organ might be studied. Further consideration would show that the anatomy of single organs cannot be understood without some general knowledge of the architecture of the body as a whole, nor can the function of an organ be understood without a knowledge of the laws governing secretion, nor can special pathology be taught without a preceding knowledge of pathological processes.

The adoption of this principle of concentration is one of the most important reforms attempted in education. It must be considered an experiment which can only be judged by its results, and which if successful will be widely adopted, not only in medical but in general education.

The manner in which anatomy, physiology and pathology are taught has been necessarily modified to a considerable degree. I shall speak only of the changes which have been instituted in teaching pathology and of the effect which these changes have had on the students. The course as given in the past has extended over the entire second year. It consisted of lectures, laboratory work, demonstrations, recitations and attendance at autopsies. Owing to the lack of space it was necessary to divide the class into two sections for the laboratory work, giving to each section thirty-one exercises of two hours each. Lectures were held twice during the week, and a demonstration and recitation each once. Every student was further obliged to present a card showing attendance at twelve autopsies. The entire time devoted to the subject was one hundred and eighty-six hours. It cannot be denied that the course was not satisfactory. There could be but little co-ordination in the teaching. The lectures could not follow the laboratory work, chiefly owing to the scant time devoted to the latter. In the lectures an attempt was made to appeal to the visual sense by means of lantern slides and diagrams; but even by these means, coupled with the utmost efforts of the lecturer, the attention of the students was not fully held. Nodding heads and listless expressions of face met the vision of the lecturer before the traditional fifty-five minutes had expired. He had not reached that desirable condition of mind and conscience when such things were indifferent to him, and he frequently left the lecture-room in a condition of bodily, mental and spiritual depression. Occasionally when topics were reached in which the lecturer was acutely interested there was always the temptation to enlarge on the subject and get some satisfaction out of his own talk, the lecture being very similar to a game of solitaire. In spite of these drawbacks the lecturer was generally regarded by the students as a good lecturer and teacher. Weekly recitations were even more discouraging; the attendance was poor; there was difficulty in arriving at a cordial understanding with the students; they answered questions wearily and asked for no assistance out of their difficulties. The demonstrations were always a failure. They were held in a small room, and the attempt was made to show and explain objects simultaneously to one hundred and fifty men. In some years the class was divided into sections of twenty-five; the specimens were arranged in six groups, and demonstrated in turn to each group by six demonstrators. The students probably received more in this manner, but the effect on the demonstrators was deplorable. After repeating a rapid and superficial demonstration six times in the hour, each man felt, on leaving the room, that nervous prostration was staring him in the face. The distribution of the specimens among the demonstrators caused great dissatisfaction, and the unfortunate head of the department usually had to content himself with a myoma. The laboratory work was more satisfactory, but even in this a very limited course only could be given, and the impressions gained on Thursday seemed generally lost before the next Tuesday.

At the end of the course an examination of three hours' duration was given. Two hours were devoted to writing answers to a series of questions on general subjects in pathology, and one to the description and diagnosis of mounted histological preparations. The examination was never a difficult one, but it showed something of the results of the method of instruction. In the last five years 23 per cent., or nearly one-fourth of the entire class, yearly failed to pass the June examination. In the year 1895, 33 per cent. failed to pass. Such a large number of rejections can only point to insufficiency in the methods of instruction. The instructors in the department worked honestly and the intelligence of the classes was good. The men who passed the best examinations were not always those who had shown the greatest diligence during the year, although this was usually the case.

Under the new system, the forenoons of October, November and December, and the afternoons of December are devoted to pathology. The purely artificial division of the course into lectures, laboratory work and demonstrations was done away with. Each student was given a place in one of the two laboratories and provided with a microscope and other necessary tools and reagents. The laboratories are efficient, though in both artificial light is necessary for a part of the time. The class was divided alphabetically into groups of ten, which groups formed definite

units. The laboratory was the centre, the other parts of the course calling groups of ten temporarily from the laboratory work. The main work of the laboratory consisted in the study of histological specimens representing the various pathological processes, which were in part given out to the class as sections already cut and stained, and in part were prepared by the students themselves. A printed syllabus embracing all the work taken up was sold the student at a price to cover the cost of publication. In the syllabus only general descriptions of the various processes were given; the students were expected to work out the details from the specimens studied.

In addition to the material from autopsies and surgical operations, animal experiments were used to illustrate pathological processes. The work was begun by the study on the web and mesentery of the frog of the vascular changes produced by injury. Each man in the class studied the alterations in the circulation, and most of them were able to see and depict the emigration of leucocytes. This was followed by the study of the formation of the exudation in the ear of the rabbit. The various degenerations and the most important infectious diseases were studied in the same way, each group of ten having its own case.

From the very beginning of the course, single sections (ten men) were sent to every autopsy. They were made acquainted with the technique of the autopsy, and were required to examine the organs microscopically in fresh sections, and to make bacteriological examinations and cultures. About three hours were thus spent by a section at an autopsy. It is difficult for more than ten men to see an autopsy and have it properly explained to them. On the following day the organs from the autopsy were demonstrated at the school to single sections. Each demonstration lasted about thirty minutes, and the students in most cases made microscopic examinations of the tissues and stained slides for bacteria. The demonstrations were held in various rooms in the building, wherever space could be found. A section was sent from the laboratory to the demonstration, and when it returned the section next in order followed. Each student witnessed and assisted in four autopsies at the hospitals, but the material from a great many more was demonstrated to him in an effective manner.

After the men had become accustomed to the manner of work, and understood what was required of them, the greater portion of the time of the instructors was taken up by these demonstrations. Often three demonstrations were conducted simultaneously in different rooms, so that thirty students were in attendance.

Pathological material comes at random, and the character of it cannot be made to conform to the course of instruction. In most instances, however, some of the processes which are being studied, or have been studied, will be represented in the material, and particular attention can be bestowed upon them. All of the organs from an autopsy were demonstrated together, and the interdependence of the various lesions pointed out. In the absence of fresh material, the large supply of specimens in the Warren Museum, many of them preserved in such a manner that the color is retained, were used. This material was demonstrated to sections in the same manner as the fresh. It is practically impossible to demonstrate in an effective manner to more than ten men, and the small number has a further advantage in making the demonstration less formal, so that men will ask questions. Such questions are of great assistance to the demonstrator and often show him the best manner of presentation. The demonstrations were varied by having the students examine the organs and point out the lesions in them. Such demonstrations are of utmost value in a course in pathology.

The demonstrator must be a good teacher, and give the students the fullest opportunity of learning by their senses. He is often tempted to take up the time with a discourse on the character of the lesions and their association, pointing out various things as he goes along. When he has repeated this to several sections, he finds he is very weary and that the men have learned nothing. The students must see, feel and compare things, and it takes a long time for them to appreciate what they see and feel. We often forget how familiar the objects are to us and how new to them. The instruction is often tiresome to the teacher, particularly at first, but now and then he is repaid by learning from the student a new point of view, or by being shown something he has entirely overlooked. In addition to these demonstrations, the sections made a visit to each of the pathological laboratories connected with our larger hospitals and were shown the general work of a pathological laboratory, in order that they might understand the close relation between such work and clinical medicine. On these visits, which lasted three hours, they spent part of their time in examining surgical specimens and culture tubes, which were sent to the laboratory for diagnosis.

The essential principle in teaching pursued in the laboratory work, consisted in reducing the instruction given to the smallest possible amount. It was considered a great mistake to show or tell a student anything which he could find out himself from the specimens before him. It always seems hard to allow a student to work for an hour over a matter which could be explained in a few minutes, but in the one case he acquires his knowledge by close observation and deduction, and in the other he has been told. Any one who has had much experience in teaching and in study knows the difference.

The students were required to draw the objects they were studying. Drawing has a number of advantages. It compels a man to observe more closely, for he can only draw what he has clearly seen. It compels him to study more slowly, and keeps his attention fixed on his work. No one without a long training can look into a microscope and comprehend the complicated picture presented there. But as the picture slowly grows under his hand and he puts down one detail after another, resolving it into its simpler components, he begins to understand it. The importance of this manner of work was soon realized by the students. Those who from supposed inability to draw, or from constitutional inertia, would not attempt it soon saw they were not advancing as rapidly as the others.

Informal explanations of specimens were given from time to time to the entire class, but never before they had themselves studied the specimens and found out the difficulties. The most interesting and satisfactory part of the course was the evident change in the men under this treatment. At first they seemed to grope around in an uncertain manner; they saw things with difficulty and did not understand the relations of what they saw. Then they gradually emerged into the

light and began to see and think for themselves. Their study had the stimulus and fascination of original research, for it was largely such. The teaching was no longer an attempt to pour information into passive minds, to pump into buckets unwillingly held at the spout of knowledge or presented with the cover still on, but it was helping men to learn. There is no weariness in teaching; the teacher receives as much stimulus and enthusiasm from the students as he gives out himself, and actually learns much from their observation. Repeatedly the attention of the teachers was called to conditions which had been entirely overlooked. Explanations had to be given very carefully and had to fit the conditions, or the inadequacy of commonly accepted views confessed.

In the course, lectures played a very minor part. At first it was thought necessary to lecture every day, the lecture lasting the traditional fifty-five minutes. Then they were held when it seemed necessary, and there was no fixed time for the duration of the lecture. Occasionally the entire class would adjourn to the lecture-room for a demonstration by means of lantern slides of some matter which was only imperfectly shown by the specimens at their command. Occasionally two or three lectures were given on topics which had a direct bearing on the processes they were studying but which could not be represented by specimens. It would seem possible in another year, when the syllabus can be sufficiently expanded, that the lectures might be omitted altogether. The students themselves do not sufficiently appreciate the inadequacy of the lecture system. It seems so much easier to be told things than to learn them. There is undoubtedly a place for the lecture, but it must have the idea not of imparting knowledge but of expanding knowledge already acquired. A man with a knowledge of the farm can listen with pleasure and profit to a lecture on other things pertaining thereto, but a lecture can give a man no idea of what the farm is.

On Saturday an oral recitation was held in each laboratory. The object of this was not so much to find out what the men knew as to explain the points on which they were ignorant. The students were encouraged to ask questions themselves.

The afternoons of December were given to pathological conferences. Each section was given the organs of an autopsy. These were divided among them, and they examined, weighed, measured and described them. They made the necessary microscopic, chemical and bacteriological examinations under some supervision, and were given certain articles to read in connection with the work. They looked up the clinical history and from all the data which they could obtain the case was written up. When they had gotten what they could in this way, the material which they had collected was presented to an instructor who went over it with them, cut out and expanded and made the whole homogeneous. The case was then rewritten by one man selected by the others in the section. The case was then presented to the class by the section, and the organs and microscopic sections demonstrated. The exercises were rendered more valuable by the kindness of some of the clinical men who came in and talked of the clinical aspects of the case. The course was not as valuable as it might have been, owing to lack of room in which the men could do this extra work.

Written recitations were held on an average once a week. In these the students were required to describe specimens, some of which they had seen and studied, but frequently the specimens were strange to them. A careful, full, objective description was demanded of them. The books were marked and returned to the students and at the same time the correct description of the specimen logically arranged was written on the board. Time was given them to compare their description with that on the board and to examine their specimens. The marks given them in these recitations counted one-quarter of their total mark for the course. Once a month or oftener there was a systematic visit from man to man and marks were given, based on the character of their work as shown by their laboratory books and by questioning them. Improvement or the lack of it was brought out in this way. The general character of their laboratory work counted another fourth of their total mark.

In such laboratory work there is no necessity for and a positive disadvantage in having a large number of instructors. We usually endeavored to keep one instructor in each laboratory, but frequently when there was plenty of material for demonstration, both laboratories were in charge of one man, who alternated between them. The presence of an instructor did not seem to make much difference in their work. There was never any confusion and but little evident loafing. Intellectual loafing could easily be detected by the examination of the laboratory book and a few sharp questions. The men are known individually and can be assisted as individuals.

As the work progressed, it was found that the students could not, with advantage to their work, remain in the laboratory for four hours. One advantage of the lecture was the break in the laboratory work. After the first month a recess of twenty minutes was given from 10.40 to 11; the men were all turned out of the laboratories and all the windows thrown open. There was at first some difficulty in getting the men away, but cold air finally accomplished it. They returned to work at 11, in rooms in which the air had been thoroughly renovated. The brief interval was found to be fully as necessary for the instructors as for the students.

Methods of examination are always a problem, and almost any form is open to objections. A correct system of marking should take into consideration the effort of the student and his improvement. That was possible by the system adopted. In addition to the examination which was continuous through the course, it seemed that some general examination was necessary, in order to ascertain something of the general knowledge of the candidate and what he had profited by the course. This was divided into two parts: A practical examination in gross and microscopical pathological anatomy, and a written examination covering ten questions, chiefly on pathological processes; the practical and written counted each 25 per cent. Such a written examination has one serious fault. It can be crammed for and is but little real test of a man's power, except his power of passing examinations. It is impossible to ask more than a certain number of questions which will be fair to all. The enterprising student collects the examination questions for a series of years and uses them as a basis for his cramming. I have repeatedly known men who never went

to a lecture, or gave any attention to a subject save a cram two weeks before examination, to receive a higher mark than one who had studied the subject conscientiously. Some time ago I saw a great deal of two men in the second class, both good students, though they rarely went to lectures. They were once discussing their marks in a certain subject: X had received an "A," Y only a "C." X explained the matter by saying that Y was foolishly interested in the subject, and had attended everything, while he, X, had used his time intelligently for ten days before the examination. A student once came to me very much distressed about his mark. I recognized him at once as one of the constant attendants at lectures. He explained that he had coached three men for the examination, and, as it proved, only too well. One of the men had received "B," the others "C," while he had received only "D." I was obliged to acknowledge that it was a very hard case.

The practical examination was partly oral and partly written. The oral examination has much in its favor, but it is open to the objection that it gives a quick-witted man a great advantage, and it takes a great deal of time to examine a large class. It is very difficult to examine men orally with perfect impartiality and mark them correctly. The written practical examination consisted in the description of microscopical specimens.

The most unsatisfactory part of the examination was the oral examination in gross pathology. The men were given a specimen, usually a fresh one; fifteen to thirty minutes were allowed for the examination of it, and then they were questioned about it. The whole plan of the examination was to ascertain if the men really could see things, and if they could draw the proper inferences from what they had seen. Some of the men, generally those who in other ways had shown themselves above the average, did extremely well. The larger number were vague. They did not seem to be sure of anything. A small number of men were grossly ignorant. The general average of the marks given was much below that in any other form of examination. It is probable that the fault was in our method of demonstration. There was too much instruction given, and the method used in the laboratory, that of making the men do their own thinking and reasoning, was not sufficiently carried out in the demonstrations.

The highest general average was obtained from the written examination. As a rule, the men who had done the best work in the laboratory and in the practical examination received the highest marks, but there were some notable exceptions. One man, whose laboratory work averaged 8.6 on a scale of ten, and whole practical examination gave 8.5, received only four on the written. Several men received full marks on the written whose laboratory and practical work was below the average. There is some disparity between the results of marking from laboratory work and examinations by written answers to questions, but it is not so great as one would think. There is some unfairness in marking in the written examinations, because chirography and expression will always count for something. One often overlooks inaccuracy of statement if the matter written is legible and well expressed. The written examination pulled over about ten men who would otherwise have been dropped. It is possible that in another year the written examination will be dropped or the character of it greatly changed. At the end of the strictly pathological course there were sixteen men whose work had been unsatisfactory. They were not allowed to take the optional courses in January, but were advised to review their work under the direction of instructors who were assigned to them. A personal interview was held by the head of the department with each man and an attempt made to find out the reason for his shortage. Most of them had the usual excuses of dying relatives who required their care, or of general ill health on their own part. A few were honest and said they had loafed. Eleven out of the sixteen men worked hard during the month over their past work and passed the examination, some of them receiving good marks. Five failed, being the only ones out of a total class of 157. This represents about the proportion of men who are absolutely hopeless. They do not seem to be vicious, but are incapable of mental exertion. They take no interest, and will sit for hours with absolutely vacant minds. They are unfit for medicine, or for any pursuit which requires intelligent exertion.

During January there were a number of optional courses given, which were designed to cover thoroughly subjects which were only touched upon in the general course in pathology, and which had a more direct clinical bearing than the general work. These courses were on surgical pathology, neuropathology, and the infectious diseases due to the protozoa. In the course on surgical pathology, clinical cases were seen for the first time; the various processes of inflammation, infection and wound healing, which were studied in the laboratory by lesions produced experimentally, being illustrated by similar conditions in patients. A clinic was given each morning, followed in the afternoon by a laboratory exercise at which a variety of specimens were studied illustrative of the lesions seen at the clinic. In other words, the clinic each day set the problems and aroused the attention of the students; the laboratory exercise furnished the solution.

The course on neuropathology was a very thorough one, and embraced a study of the various pathological conditions of the brain and cord. The normal anatomy of the brain and cord was repeated with the pathological. The best way to understand the nerve tracts of the brain and cord is by the study of the degeneration following interruptions of them caused by pathological conditions. In the course on protozoal diseases the lesions produced by these organisms and their life history was given. In all of these courses the laboratory work was a prominent feature, written recitations were given at intervals and an examination held at the end. Although the men understood that the courses were purely optional and the work done in them would not count for their degree, they were attended by practically the entire class, some of the sixteen even disregarding the prohibition laid upon them, and the work was marked by the same zeal and enthusiasm which characterized the work in pathology.

There are certain things which seem evident, and which have been prominently brought out in this course:

(1) That the mind of the student must be active and not passive. That he can only acquire knowledge by his own powers of observation and deduction; he cannot acquire it by being told things.

(2) That teaching should be individual as far as

possible. That the central idea should be to give opportunities to the student, and to assist him in the effort which he himself makes.

(3) That medical education should not be directed solely to teaching the medical art, but education in its true sense, the development of the individual, must not be lost sight of.

THE CASE SYSTEM IN MEDICINE.[1]

BY W. B. CANNON, A.M., BOSTON,
Student, Harvard Medical School.

I WISH to speak briefly of three points concerned in the use of clinical records in teaching medicine: The practicability of the method; its value from the point of view of the medical student; and what seems to me its place in a medical curriculum.

First, as to *practicability*. One of the earliest objections made to the use of cases in teaching medicine was that the plan rested upon a false analogy between the nature of cases in law and the nature of cases in medicine. It was observed that historic cases in law have had a definite bearing on the development of legal doctrine. Certain decisions made centuries ago have fixed the law for all subsequent cases of like nature, and from the study of selected aspects of such cases the student can derive for himself the principles of legal practice. In medicine, however, there is not this clear relation of particular medical cases to the historical growth of medical art. We look rather to our fundamental sciences — anatomy, physiology, pathology and therapeutics — for our principles. This difference between the relation of cases to medical doctrine on the one hand and to legal doctrine on the other is at once admitted. But the contention may be strongly held that this relation is not pertinent to the argument in favor of the use of the case system in medical schools. For the only claim made in the argument is this, — that requiring the student to do, so far as possible, the practical work of the doctor while in the medical school is very much like requiring a student to do the practical work of a lawyer while in the law school. In both instances the students deal with the problems presented by actual cases, and in a most natural manner increase their power by their own activity. It was this analogy between the possibilities of individual effort on the part of the students that pointed to the applicability in medical instruction of a method which has proved of such great value in the teaching of law.

The idea of using printed records of cases as centres of interest in studying medicine occurred to me some two years ago. Since that time I have been watching carefully for every possible opportunity to apply the method, and have tried to see all the objections which might be raised against the plan. It was only when I was fully convinced that a study of real histories could be made feasible in teaching medicine that the scheme was brought forward. The first case studied under the system was given out by Dr. G. L. Walton to a small class in neurology last December, and it revealed at once the usefulness of the plan. In January Dr. J. J. Putnam gave out printed cases in his course in neurology, and since then Dr. Richard C. Cabot, Dr. J. William White, of Philadelphia, and Dr. C. E. Riggs, of the University of Minnesota, have put the method to test. So far as I am able to learn, there has not been the slightest difficulty in applying the plan, and its practicability in the study of medicine can be stated, I believe, as fully and successfully demonstrated.

The *value* of the case system in medicine has also been remarkably demonstrated in these last few weeks. Many advantages over the didactic lecture and the recitation system were claimed for the case method, but the peculiar merits claimed for it were the arousal of student enthusiasm and interest, the easy possibility of correlating the scientific and clinical sides of medicine, and the drilling of the mind in judging medical data. Not only have these claims been verified, but new merits, unforeseen, have presented themselves. In speaking of these matters I shall restrict myself to statements of personal experience in the exercises conducted by Dr. Richard Cabot, and to student testimony regarding these exercises. The interest which the application of the method has aroused among the members of the present graduating class in the Harvard Medical School is especially gratifying. The exercises at which these cases are discussed have the largest regular attendance of all clinical exercises in this last half of the fourth year. Again and again I have heard students say, "Why could we not have had this way before?" They attend the conferences faithfully, they state to those who are engaged elsewhere that they are missing much by not coming, they dispute and question not only one another but their instructor, they are kept alert and keen-minded throughout the whole discussion. "Conference maketh the ready man," and this is one of the chief characteristics of a good physician — he is a ready man. Yet there is nothing in listening to lectures that tends in any way to develop this valuable trait in the medical student.

Another matter which the students are learning is the judgment of clinical data, the estimation of the value of evidence. In the text-books symptom after symptom is written down, without indication of importance or weight. In considering a particular case and discriminating between the various diseases it might represent the students first begin to see what may be called the perspective of symptoms, and learn to distinguish between the important and the unimportant, the common features and the more unique.

Among the new unforeseen merits characterizing the case method is the discovery that the particular instance may be stated so vividly that it will leave in the mind a picture quite as definite and lasting as the sight of a real patient. This virtue suggests the especial use of the method in teaching the management of acute, urgent conditions, — such as alarming hemorrhages, the agonizing distress of angina pectoris, and the cutting, stabbing pains of biliary colic, — conditions which we students never see in the hospitals, and which we may be called upon at any time to treat. A simple case given out for discussion during the last ten minutes of the hour, about a week ago, will illustrate the point.

A middle-aged man was seen writhing in intense pain referred to the epigastrium. Vomiting of greenish fluid took place; there were loose discharges from the bowels, small in amount. This state of things lasted, with only short remissions, for two days, until a small dose of morphia, which, for special reasons,

[1] Read at a meeting of the Boston Society for Medical Improvement, March 5, 1900.

had been hitherto withheld though asked for, was administered, after which there was complete relief for many days. The pupils were dilated, the pulse regular and of normal character. Nothing special had been eaten or drunk to cause irritation of the stomach. The abdominal walls were neither distended nor retracted, no intra-abdominal tumor was to be detected, nor was there any excessive tenderness on pressure. It was afterwards learned that he had had several such attacks, that for many months or years his legs had been weak, that he had neuralgia and numbness in them, that he stumbled in walking and staggered with his eyes shut.

Here we have a real and vivid description of a gastric crisis in tabes, made so striking that it leaves a deep and permanent impression in the memory. This case also illustrated another of the unexpected features of the case method, that of showing to the students themselves and also to their instructor what they do not know and wherein their knowledge is inaccurate. At the end of this record of a gastric crisis the question was asked, "What further examination would you make?" This one question alone showed about one-half the students present that they were entirely wrong in their memory of the Argyll-Robertson pupil, and the question further showed that a large number of the graduating class believed that the knee-jerk was ordinarily increased in tabes. These are merely instances of the state of affairs among the students which the method is bringing to light. They are going through their last year in the school ignorant of their ignorance and complacent in their false knowledge until meeting the actual conditions of real cases shows them their deficiencies. It is not to be expected that the lecture system will reveal to the students their faults. How can it do so? The students sit passively listening to their instructor; the instructor does not know whether they have understood, or learned, or are remembering; his chief knowledge of the students is derived from what they write in a blue book after cramming their minds for a few weeks with what he has told them during a whole school year. In the complexity of medicine what can such a test show?

Another merit which the actual employment of the case system has developed is the training which students get in being required to adapt themselves to actual difficulties in practice. The first case presented under this method was at the time in the private practice of the instructor, Dr. G. L. Walton. The diagnosis of cerebral hemorrhage was made by the students and the probable site of the hemorrhage located. The instructor then put the practical questions which he had had to answer for the family: "Will you allow the patient to sit up in bed? Why will you forbid him to sit up? What will you give him to eat? Does he need drugs? What will you do for him? What is the prognosis with such a past history? His wife is a nervous, imaginative woman who will worry herself to a wreck if you are not careful. What will you tell her about her husband?" All of these questions the students were compelled to answer and to give reasons for answering as they did. Now, does it not seem reasonable to suppose that by requiring such exercise of thought, and discrimination and circumspection of all the data, students are trained to greater power in studying their authorities and in increasing and applying their knowledge and in using their judgment than could possibly be the result of idly listening to lectures?

Finally, I wish to state from the student's point of view the apparently proper place for such a method in a medical curriculum. In the argument for the adoption of the study of case histories in medicine, a sharp distinction was drawn between the two attitudes of the physician. His first work is that of the observer; he must secure his data thoroughly and skilfully, and this work is fundamental. The only adequate training for such observation is actual contact with human beings — a training which Dr. Wentworth's plan of section teaching admirably provides. But there is the other attitude of the physician, that of the careful judge who regards his data on all sides, relates it to his previous knowledge, makes his differential diagnosis, has his reasons for his prognosis and applies his rational treatment. Now, it is just this central position between the scientific work of the first two years of medical training which provides principles and theories, and the practical work of dealing with actual problems that the study of data provided in printed cases will have its greatest value. At the clinics the students are drilled by their corrected efforts to be thorough and discriminating in their observation, and thus to secure reliable clinical data — the emphasis here is on observation. At the clinics, however, the time is not sufficient to consider these cases in all their details. This defect the case method makes good; for with the printed records in their hands the students are drilled by their corrected efforts to judge with care exactly the same sort of reliable data which their own observation has secured. The cases can be so arranged as to develop naturally the relations of the group of diseases under consideration, and the similar diseases between which distinction must be made. To these cases the students can bring all their knowledge of anatomy, physiology, pathology and therapeutics, and these subjects, which are now more like separate packets in the mind than related parts of a single system, take on a new importance and interest. The students thus fix their knowledge by unifying it, by bringing the new information into relation to that already secured. They learn the use of their authorities as books of reference, and they must study their matter from day to day, for judgment and reasoning and skill in analysis cannot be crammed in the few weeks before an examination; and finally, all this discipline has a direct value for the bedside instruction, pointing out to the student what to watch for, showing him the importance of complete examination, and teaching him how to interpret observations as they are made.

It seems to me that such a plan presents conditions worthy of an instructor with the widest knowledge of both medical science and medical practice, one who is keen and ready and accurate. In his close relations with the students in the conferences he occupies a position of far greater importance than lectures can possibly give him in securing the knowledge and skill and in determining the ideals of young men who are looking forward to the work of the physician.

A NEW INVESTIGATION OF YELLOW FEVER. — It is reported in the *Philadelphia Medical Journal* that the Liverpool School of Tropical Medicine is soon to send a commission to Brazil for the purpose of studying yellow fever.

A PERSONAL EXPERIENCE IN THE TEACHING OF SURGERY.[1]

BY HERBERT L. BURRELL, M.D., BOSTON.

WHEN I was in Philadelphia in February I found that Dr. J. William White, the professor of clinical surgery in the University of Pennsylvania, had already put into use Mr. Cannon's valuable suggestion of "the case method of teaching systematic medicine." Dr. White very kindly gave me a set of his hypothetical cases and on my return I asked a few of the students in the fourth-year class to try the method.

From even this short trial I am convinced of the value of the system to the best students in the class and am confident that it is a method that will be an advance in the teaching of surgery for the average student when it is adopted as a required part of the instruction. It is this average student that at present is dissatisfied with his instruction in surgery at the school and with whom I am not alone dissatisfied but disheartened as to his progress in education. He is intelligent, painstaking, zealous in his work, but after a short time is tired, receptive only to the unique or grotesque in surgery, and often regards the most extraordinary diseases or conditions as simply of momentary interest. As a student he is sure that he is not getting what he wants, and as a teacher I am sure that he is so tiresome that I am tempted to give him up.

For many years I have suspected that the method I pursued was wrong. It was clearly not the fault of the student, for when he first came to me he was thirsting for knowledge, but in a short time he stayed away or turned indifferently from what I hoped would be an inexhaustible well of information. My attitude was wrong. The idea that I could furnish information which would indefinitely supply a vigorous mind searching for truth is to me now absurd.

The true position of the teacher is first to guide the pupil in the rudiments of the art or science, and then to inspire him (largely by force of example) to do his own work.

Even in the limited number of reports in "case taking" that have come to me from the students it is a keen pleasure to see their mental growth. There are naturally some students who object to using their reason; they believe that they are at school to be taught, but if these students can once feel the pleasure of creative work they will quickly come into line, and if they cannot be made to do so they will fall into empiricism.

In the month of January of this year, Dr. E. H. Nichols and I gave a course in surgical pathology. The students of the second year had finished their course in general pathology and elected this optional course. I hoped to unite the clinic with the laboratory, and to make it obvious to the student that the knowledge obtained in the laboratory was abstract unless applied to the living patient, and that the knowledge obtained at a clinic was empirical unless the laboratory furnished an explanation of the principles of surgery. The course was arranged so that a clinic was held every other morning and a laboratory exercise was held every afternoon.

Incised wounds were shown in the morning at the clinics on January 3d and 5th, and laboratory demonstrations of prepared specimens of incised wounds of the rabbit's ear, the rabbit's tongue, and human incised wounds, were shown on January 3d, 4th and 5th.

Dr. Nichols prepared a syllabus of surgical pathology which was bought by the students. At the clinics cases illustrating the different types of the disease or injury under consideration were carefully planned for weeks ahead. Dr. Nichols collected pathological material for "slides" for months ahead. We were thus able to show to the student the principal foundation subjects of surgical pathology on the living patient and in gross and microscopic pathology.

The schedule on next page gives the arrangement.

At both the laboratory and the clinic the students were, after a few words of explanation, given the problems to work out themselves. At the clinic this was often difficult, but usually, after explaining a series of cases for perhaps twenty-five minutes, the rest of the hour the students were allowed to examine the patients under the supervision of the house staff. And here, to me, was the interesting point; the keen interest, the searching questions, the self-reliant reasoning on the part of the students was something I had never seen before in the average student. In every class of students there are bright minds that work out problems themselves, but here even the average student was imbued with the principle that to learn one must actively acquire, not passively receive. To me this was very marked, and all of my house staff said they wished they were back in the school.

The total number that elected the course was 127; the highest attendance was 122; the lowest attendance was 101; the average attendance was 115. The number of men who presented themselves for examination was 108, and this was remarkable because the whole course was voluntary. The men seemed to wish to test themselves to know what progress they had made. Had the examination been compulsory I should have conditioned only four men.

Dr. Nichols conducted an examination on his laboratory work and it was very satisfactory. I regret that he is abroad and is not co-operating with me in this report of our course in surgical pathology.

The secret of progress in these students was their being given an opportunity to acquire, not alone receive, knowledge.

As a matter of interest, I have tried the same method of allowing students to acquire knowledge with some of the fourth-year class. I have had to give it up, as it was clear that they had been what I term "spoon fed." The average student in the present fourth year is not mentally as self-reliant as the average student in the present second year. This I believe is due to the principle of teaching that has been carried out in the course in pathology. It may be said that this is impractical to carry out in the teaching of surgery. It seems to me that, with certain minor modifications dependent upon using human beings instead of dead material, the general plan of making the student acquire knowledge instead of receiving information is the great step that can and should be taken in teaching surgery. This, however, is only a part of the advance that should be made; the required knowledge should be sharply defined and made obligatory. The elective part of surgery should be made very broad and elastic.

[1] Read at a meeting of the Boston Society of Medical Improvement, March 5, 1900.

If proper facilities are afforded students to *acquire* knowledge, as has been so suggestively planned by Dr. Wentworth, in sectional teaching they can be taught to observe accurately and reason clearly in actual contact with the patient. But to me the most suggestive advance will be the use of the "case method" of section work to continually go back to the principles in interpreting clinical phenomena. So that when a practitioner treats a case of intestinal obstruction he will revert to the foundation principles of the anatomy, physiology and pathology of the intestinal tract. He will then be a practitioner whose knowledge

Date.	Day of Week.	Clinic.	Laboratory.	
January 3.	Wednesday.	Incised wound.	Rabbit's ear.	Healing of wounds, incised. Experiment: Ear of rabbit, 2 days, 6 days, 11 days, 22 days.
" 4.	Thursday.		Rabbit's tongue.	Healing of wounds, incised. Experiment: Tongue of rabbit, 24 hours, 3 days, 8 days, 10 days.
" 5.	Friday.	Incised wound.	Incised, human.	Healing of wounds, incised. Human, 12 days, 14 days, 14 days, 6 months.
" 8.	Monday.	Incised wound, internal.	Incised wound, internal.	Repair of wounds of intestine. Human, 48 hours, 4 days, 10 days.
" 9.	Tuesday.			
" 10.	Wednesday.	Granulated wound.	Granulated wound, rabbit's tongue.	Healing of wounds, granulating. Experiment: Tongue of rabbit, 48 hours, 6 days, 10 days.
" 11.	Thursday.		Granulated wound, human.	Healing of wounds, granulating. Human. (1) Infected muscle of rabbit, 14 days; (2) repair of muscle, 7 days; (3) human, 14 days; (4) chronic ulcer; (5) duplicate ulcer, 4 weeks.
" 12.	Friday.	Sutures.	Sutures, silk.	Sutures, silk. Experiment: In rabbit muscle, 48 hours, 6 days, 10 days.
" 15.	Monday.	Fractures.	Sutures, catgut.	Sutures, catgut. Experiment: In rabbit muscle, 48 hours, 6 days, 10 days.
" 16.	Tuesday.		Fractures.	Repair bone, compound drill hole, rabbit femur, 48 hours, 6 days, 8 days, 14 days, 22 days, 30 days.
" 17.	Wednesday.	Abscess and diffuse suppuration.	Abscess.	Abscess formation: Staphylococcus, furuncle, carbuncle, chronic abscess, catgut suture, abscess, 6 days.
" 18.	Thursday.		Erysipelas and lymphangitis.	Diffuse suppuration: Streptococcus, lymphangitis, erysipelas of scalp.
" 19.	Friday.	Appendix.	Appendix.	Appendix: Acute, subacute, chronic, tubercular.
" 22.	Monday.	Osteomyelitis.	Osteomyelitis.	Osteomyelitis: Acute, subacute, chronic.
" 23.	Tuesday.			
" 24.	Wednesday.	Tubes and ovaries.	Tubes.	Diseases of Fallopian tubes: Acute salpingitis, subacute salpingitis, chronic salpingitis, tubercular.
" 25.	Thursday.		Ovaries.	Diseases of the ovaries: Retention cyst, papillary adenocyst, malignant adenocyst, mixed tumor.
" 26.	Friday.	Lymph nodes.	Lymph nodes.	Diseases of the lymph nodes: Acute inflammation, sarcoma, cancer, tubercle.
" 29.	Monday.	Breast tumors.	Benign breast.	Diseases of the female breast: Benign, Acute mastitis, adenomyxofibroma, intracanalicular, papillary, adenomyxoma, chronic mastitis.
" 30.	Tuesday.		Malignant breast.	Diseases of the female breast: Malignant, medullary cancer, scirrhous cancer, malignant adenoma, invasion of pectoral muscle, small round-cell sarcoma.
" 31.	Wednesday.	Tubercular bones and joints.	Tubercular bones and joints.	Tubercular bones and joints: Primary, focus epiphysis, tuberculosis synovial membrane.

teaching surgery, for it will oblige men to observe accurately, to record carefully, to continually go back to their foundation studies for the principles of surgery, and it will call forth all the student's power in an analysis of his case.

In surgery this is to me imperative. There is a great deal of glamor about operative work; the results are brilliant, and the student is apt to deem surgery simply a question of cleanliness and operating. In fact, surgeons of to-day do not hesitate to say that they do not make diagnoses; they simply operate. This tendency for surgeons "to work more with their hands than with their heads" is fraught with danger to the true advancement of surgery on a secure scientific basis. The "case method" system and sectional teaching will counteract this danger and will oblige students to use their brains, not alone their hands.

The advance of teaching in the first and second years has been along the lines of concentration and sequence. The advance of teaching in the third and fourth years should be along the same lines of concentration and sequence, plus electives and co-ordination of teaching subjects. The foundation principles of anatomy, physiology and pathology should be carried into the teaching of surgery in the third and fourth years, not by the foundation teachers but by the students being taught in their "case taking" and is drawn from known scientific facts and not a mechanical operator or an "up-to-date," "last remedy" practitioner.

A CONSIDERATION OF THE PRINCIPAL OBJECTIONS TO "SECTION TEACHING," TOGETHER WITH SOME OF ITS ADVANTAGES.[1]

BY A. H. WENTWORTH, M.D., BOSTON.

THE greater part of my recent article on "section teaching"[2] was devoted to the consideration of a method for teaching sections and to the description of a system of rotation. In the present paper I shall consider the chief objections to section teaching, together with some of its advantages.

OBJECTIONS.

(1) The most important objection is that a large number of additional instructors will be required. This applies especially, so far as the Harvard Medical School is concerned, to instruction in clinical medicine, because in this department the time of the present instructors is fully occupied. If the system which I have described were adopted without any al-

[1] Read at a meeting of the Boston Society for Medical Improvement, March 5, 1900.

[2] Boston Medical and Surgical Journal, February 15, 1900.

teration in the apportionment of sections, it would necessitate the appointment of eight additional instructors in clinical medicine. It is necessary to hold an appointment in a hospital in order to utilize the patients for purposes of instruction and it would be difficult, or perhaps impossible, to find eight men with hospital appointments who were qualified to teach clinical medicine. In addition to this the question of expense to the department would have to be considered. These difficulties can be surmounted in a great measure by making alterations in the assignment of sections. In order to give a clear idea of the system of rotation, it was necessary to make a provisional apportionment of the sections, and it was anticipated that alterations would be made in this arrangement. One change which could be made would be to assign four of the eight sections in clinical medicine to neurology and dermatology. This would reduce the number of additional instructors in clinical medicine to four. It might be desirable or necessary to limit the number of exercises to two or three times a week for the first year or two. These changes would not affect the system of rotation in any way.

(2) It has been suggested that section teaching, supplemented by text-books, ought to be substituted for clinical lectures. If this suggestion were adopted, it would be a very important objection to section teaching. In a two-hour course in clinical medicine, or its branches, the student should be given three-quarters of an hour in which to examine the cases without any assistance from the instructors. Most of the remaining time should be spent in correcting observations; in permitting the students to examine abnormalities in the cases which they have not seen; and in discussing differential diagnosis. In the few minutes which are left the instructor can give but a brief description of the diseases which have been diagnosticated. It is beyond the powers of an average third-year student to obtain the requisite information from text-books. It demands considerable practice and knowledge of medicine to enable one to pick out the essentials from a text-book. The students have but a limited amount of time in which to study several subjects and it requires a great deal of time *merely to read* a text-book. Instruction is given in so many subjects in the course of a year that it is only fair to the students to help them to economize their time. This cannot be accomplished by compelling them to acquire their knowledge from books that are intended for collateral reading. The professor should be qualified through his reading and experience to prepare a set of lectures that will supply the deficiencies of section teaching. These lectures should be clear and concise and should emphasize the essentials in a way to impress the students. This result cannot be obtained by lectures that resemble monographs in comprehensiveness. Still another reason for giving lectures is that a knowledge of diseases and of the results of treatment derived solely from the study of hospital patients is incomplete because of the variations which are met with among patients of better social condition. This knowledge can be supplied by the professor, together with many valuable suggestions about the treatment of patients in private practice. The lectures should be given in hospitals so that patients can be utilized for purposes of illustration. The students should take careful notes for future study.

(3) Another objection that has been suggested is that such a system of teaching might prove injurious to the patients. In answer to this it may be said that examinations of patients by students are always made under the supervision of instructors; that *critical* cases are never assigned to students, but are shown by the instructors themselves; that discomfort to the patients can be avoided by a few words of warning; and that only a limited number of students examine each patient, whereas on ordinary ward visits as many as twenty or thirty students examine the same case, of course not so thoroughly.

(4) The suggestion that a lack of clinical material may interfere with such a course cannot be regarded as a serious objection when one considers the number of patients that are treated annually in the wards and out-patient departments of the various hospitals.

ADVANTAGES.

The chief aim in section teaching should be to oblige the students to do most of the work. They should learn systematic methods of physical examination and should be required to state the results of their examinations. They ought to be able to make provisional diagnoses from the results of these examinations and to give their reasons for the same. The instructors should correct errors in examination and should criticise the deductions which are made. The entire section should take part in the discussion.

The result of this method of teaching is that the students learn systematic methods of examination and acquire accuracy of observation. They are made to think for themselves and to express their opinions before other students. One of the best ways for gaining a clear idea of a subject is to try and explain it to some one else. It stimulates ideas and teaches accuracy and clearness in description. The students take the greatest interest in this sort of work and it is surprising to see how rapidly they improve. If the method of rotation which I have described were adopted without any alteration in the apportionment of sections, or in the number of exercises, each student would examine 192 medical patients, 96 surgical patients, and 48 children, and would visit the contagious wards eight times in an average school year of thirty-two weeks. It would be difficult to overestimate the value of such a course when combined with competent instruction.

Reports of Societies.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

A. K. STONE, M.D., SECRETARY.

Regular meeting, Monday, March 5, 1900, Dr. E. H. Bradford in the chair.

The general subject discussed at this meeting was

SOME ADVANCES IN MEDICAL INSTRUCTION.

Dr. William T. Councilman described

THE COURSE IN PATHOLOGY AT THE HARVARD MEDICAL SCHOOL.[1]

President Eliot, of Harvard University, spoke on

[1] See page 558 of the Journal.

THE INDUCTIVE METHOD APPLIED TO MEDICINE.[2]

Dr. Herbert L. Burrell gave

A PERSONAL EXPERIENCE IN THE TEACHING OF SURGERY.[3]

Dr. Arthur H. Wentworth read a paper entitled

A CONSIDERATION OF THE PRINCIPAL OBJECTIONS TO "SECTION TEACHING," TOGETHER WITH SOME OF ITS ADVANTAGES.[4]

Mr. W. B. Cannon read a paper on

THE CASE SYSTEM IN MEDICINE.[5]

Prof. James B. Ames: When your President asked me to say something about our method of legal education at Cambridge I thought I could not do better than read a few pages of a paper I prepared recently on the subject of legal education and then add a few words as to the history of the new method, as it is called, at Cambridge.

The gist of the whole matter, as we look at it at Cambridge, is that the student should be made to do his own thinking at the very outset. The first three or four weeks with most students is pretty blind work and very often the student gets a little discouraged, but I think it is always very encouraging when he is a little discouraged. It is very much like the conviction of sin that precedes righteousness and almost always the man who has any real stuff in him gets over his discouragement in the second or third month. He is taught from the first to think for himself, to accept nothing from the professor on his *ipse dixit*, but to subject the professor's opinion to the test of his own criticism. The student is encouraged to express his views and I always consider those the most successful hours in my classes in which I say the least. It is my object to make the men talk, to discuss with each other, to discuss with me.

Just a word as to our experience in the introduction of the system. It was wholly original with Professor Langdell. In one sense there is nothing new; in another sense it is very decidedly new. It is simply the application in a systematic way of the method which a successful lawyer employs in dealing with his actual cases in litigation. When he has a case he goes to the original sources, the reports of previous cases and studies those cases until he is satisfied he has the principle. His work is necessarily sporadic, being determined by the cases that his clients happen to bring to him.

In the Law School we endeavor to deal with the branches of law systematically. When the inductive method, as applied to law, was first introduced by Professor Langdell very few lawyers in Boston had any confidence in its success. Very many were outspoken in opposition to it. I remember very well the first hour of Professor Langdell's course. The whole school was assembled. At the second lecture I think there were not over a dozen; the rest had seen all they wanted of the case method; the number dropped to seven and we seven were opprobriously styled "Langdell's freshmen." The class increased during the year. Towards the end we had twenty-five to thirty. The next year the proportion increased and at the end of the third year the school was about equally divided and there was a good deal of feeling among the students. In 1873 Professor Langdell was reinforced by another instructor who adopted his method and for several years there were two professors teaching his method and two teaching in the lecture way, and on the whole during the next four or five years there was a considerable gain among the students in favor of the new method. And, finally, about twelve years after Professor Langdell came, another one of his pupils was appointed who taught in his method and from that time on the great majority of the students had confidence in that method and not so much in the other, and gradually the two professors who had formerly taught in the old manner without any pressure adopted the methods of Professor Langdell, and to-day every one teaches in that way. I think it may be said that in this community at least the lawyers have come to believe also that that is the wisest way to proceed. Most of the objections to-day spring, I think, from misconception. Some persons still suppose the case method to mean simply familiarizing one's self with a certain number of adjudicated cases so that one would be a case lawyer. But it is now generally understood that the object of the inductive method is to develop intellectual self-reliance by showing the genesis and growth of the legal doctrines.

I was much interested in Mr. Cannon's paper. You have, in the hospital records, reported cases which correspond very much to legal cases. As I understand those reported medical records you have all the facts of the case and, what corresponds to our adjudication, the treatment of the case by the physician. I do not see, therefore, why the study and discussion of a wisely chosen collection of these medical cases should not be followed by the eminently satisfactory results which the study of law cases has accomplished for the law students.

Dr. F. C. Shattuck: The proverb says, "Blessed is he who expects nothing, for he shall not be disappointed." I think I must be twice blessed, for I came to this meeting expecting *something* and have not been disappointed. I have been greatly interested and instructed. The fermentation now going on in medical education and its methods cannot fail to do much good.

Dr. Wentworth and Mr. Cannon have so clearly and frankly stated alike the advantages of and objections to section work and the case method that little remains for me to say. The fact that the Harvard Medical School has no hospital of its own, not even an out-patient clinic, is an obtrusive fact. However welcome, the school is still a guest of the hospitals and must adapt itself to rules and regulations which are not necessarily uniform. How much can be put into four years of undergraduate study? What are the limits in each branch of study of the essential and non-essential? What is the relative value of each branch and how should the time be most wisely apportioned between them? These are all questions which are worthy of much careful study.

The case method is now in use in clinical medicine. If it does nothing else it ought to prepare men to better pass their examination in clinical medicine, the paper consisting in the statement of three actual cases precisely like those proposed by Mr. Cannon for teaching purposes.

[2] See page 557 of the Journal.
[3] See page 565 of the Journal.
[4] See page 566 of the Journal.
[5] See page 563 of the Journal.

Dr. Morrill Wyman, of Cambridge: Some of the things brought out in this discussion are very interesting to me. With regard to medical education in the past, my instructor in medicine (Dr. William Johnson Walker) was a graduate of Harvard in 1810; a student in the Massachusetts Medical School, as it was then called, and received the degree of M.D. from Harvard College in 1813; while yet a medical student his "Dissertation on Epilepsy" won the Boylston Medical Prize. His post-graduate course was pursued in Paris at La Charité, in the clinical ward of Corvisart, Napoleon's physician, who had then recently translated and commentated Auenbrugger's work, "The new method of recognizing the internal diseases of the chest by percussion of that cavity." Corvisart taught percussion and extended it to the abdomen; he went still further, he urged with great earnestness what he called "the medical education of the senses" as a necessity for success; he illustrated its importance in many practical ways. Laennec was then lecturing at La Charité on pathological anatomy, in noble rivalry with Dupuytren, then lecturer on the same subject at l'Hôtel-Dieu, and collecting specimens for his great museum of osteology. Laennec was meanwhile listening at the chest and collating what he heard with what he saw at the autopsy; six years later at the Necker Hospital he invented auscultation; it is hard to see how it could have been done in any other way. My instructor came home, his mind filled with the idea of this new method of education so constantly urged upon him and which, as I understand it, was what is now going on here, with far better means and opportunities, and from which much may be reasonably expected. He settled in Charlestown, and offered himself as a physician and surgeon, and also as a teacher. He became eminent in all three departments; as a teacher he probably had more pupils than any other physician in New England, not connected with a hospital. After acquiring a high reputation, and after thirty years of laborious service in his profession, he withdrew — as the Norse sagas say, "he went out of the story." When he next appeared it was in "political economy," which, like medicine, may be viewed as a science and as an art. "It teaches the production and accumulation of wealth and also the distribution of it most favorable to the happiness of mankind." Dr. Walker proved eminent in both. What he acquired he was very anxious to use for the purpose of increasing the proportion of medical education of this particular kind, that is, "the medical education of the senses," in the medical curriculum. He applied to Harvard College to allow of its introduction into the Medical School. This was about 1860. Harvard College did not see the way to grant the application. Dr. Walker said, "I will make over to you $135,000, which is what remains of my professional earnings, if you can adopt this new system." The school was then giving six lectures daily to their students, who were worn out with words without receiving the instruction they most needed. The college saw no way of altering this state of things. Dr. Walker said he did not think that of the gentlemen then in office all would find it agreeable to them to carry out the change he wanted to make. The College did not see how anything could be done then, but in ten years could bring this change about. Dr. Walker said: "Very well, the offer shall stand open for ten years." But the President said, rather tentatively, "Would it not be well to make this arrangement now, and let us carry it out ten years hence?" The answer was characteristic: "You come where I am. I shall be very glad to see you then." In the meantime Dr. Walker passed away and the money went elsewhere.

Dr. Richard Cabot: There is one point not yet emphasized as much as it should be in regard to this case system and that is the *pleasure* of it. The touch with the men is delightful. They answer up in a way I never heard them in any other course, because questions are thrown at them so constantly that they must be wide awake and because they are vitally interested in the story of the case. They want to know how it is coming out. It is the easiest and pleasantest method of teaching I have known anything about.

Dr. J. J. Putnam: The changes that have been made and those suggested in the work of the Medical School have been exceedingly fruitful, and this evening is a very proper commemoration of them. I was very glad to adopt as soon as I could the method suggested by Mr. Cannon, and I should like to say a single word about a modification of the recitation system which I had adopted the previous term, and which I think contains some of the merits of the case system. This consists in the giving out of printed questions which are afterward discussed. The design in the beginning was to cover a definite course as rapidly as possible, in order that the student should have a bird's-eye view in a systematic way, and I therefore began by making the questions correspond closely to the text of Osler's "Practice of Medicine." More recently, however, I have begun to arrange them so that they call attention to particular points or groups of difficulties, and I believe that in this way it is possible to accomplish a great deal which one cannot accomplish by simple recitations following strictly the pages of the text-book. It is true that the printed questions have not the living interest that attaches to the descriptions of actual cases, but in some respects they are better. I do not believe that the students appreciate the value of these important changes nearly so much as those of us who have striven conscientiously and at the expenditure of much time to bring the rich and varied material of our hospital services before the students, and have now to look back on much of our labor as having been expended in vain. We have brought much water to the students, but have often failed to make them drink.

Dr. H. P. Bowditch: I should like to bespeak the help of the gentlemen who believe in this new method in doing missionary work amongst those who do not. I think we have a little uphill work ahead of us. It is not always as easy as might be imagined from what we have heard this evening. Professor Ames has told us what difficulties beset the introduction of the new system in the Law School. That there is difficulty ahead of us, I think a letter I received to-day will indicate. The writer has failed to comprehend what we are trying to do, and I have no doubt other men are in the same situation. It is therefore necessary, I think, for us all to see what we can do to remove such misapprehension.

I wish I could speak of physiology as Dr. Councilman has of pathology, but we have not got far enough. The first trial has lasted only about four weeks, but so far everything has gone well. The men seem to be very much interested in their work, and I have no

doubt the system will work as well in physiology as in pathology and anatomy. The main advantage of the system is that it teaches men to think for themselves. I want to say one word about the possibility of teaching men to think for themselves by other methods as well as by case teaching. Dr. Weir Mitchell says the true lecture is one which teaches men to think along correct lines. A lecture is not simply a storehouse of information to be imparted to students. In a recitation, too, the pupils may be taught to think for themselves. I shall never forget the look of astonishment that came over one of my students many years ago, when, in the course of a recitation, he asked me some questions, and I put the evidence before him as well as I could and told him the pros and cons of the case. I then said: "On the whole, I think the weight of evidence is in favor of this view; don't you think so?" The idea that I, a professor, should ask him what he thought about the question was a very salutary mental shock to him. That sort of instruction is a very useful thing for anybody. I am inclined to think that teaching men to think is not an advantage exclusively of the case method or any other method of instruction. It is the object aimed at by all good teachers, whatever methods they employ, and men are more important than methods.

DR. C. M. GREEN: It is a considerable satisfaction to me to see the present interest in the case method of teaching, because I have been using this method for a number of years. In the year 1890 I obtained permission of the Faculty to give, once a week, a voluntary exercise in the Medical School, to be known as an obstetrical conference, to enable me to test and develop the methods I had gradually adopted in the course of my private summer teaching. The following year the Faculty made this exercise a part of the regular instruction in obstetrics; and for the last five years I have used the case method also in my gynecological teaching. This method is very properly employed in a variety of ways according to the object in view, and with reference to the other forms of instruction in the same department. In the obstetrical teaching at the Harvard School the case method is used in three ways: (*a*) Each student is required to attend at least six cases in labor and convalescence, and to make a full report of his cases; (*b*) he is given clinical instruction on at least one of his cases, and generally he receives advice, assistance, or clinical teaching on several of them; (*c*) he has an opportunity of attending once a week a conference at which reports of cases that have been attended by himself or by his classmates are read, discussed and criticised.

The cases read at the conferences are selected with a view to illustrating the principles previously taught in the didactic lectures and recitations; so that all the students are presumably competent to understand and discuss the cases, and some members of the class have had similar cases and are able to contribute their experiences. The reader is freely questioned, made to defend his statements of fact and opinion, when they meet with criticism, and asked to give his reasons for the course pursued. The instructor presides as a moderator, guides the discussion into useful channels, questions the reader on points not drawn out by the class, answers questions inadequately answered by the reader, elucidates matters imperfectly understood by the class, and finally gives a synopsis of the most important teachings of the cases presented. Effort is constantly made by the instructor to avoid giving a direct answer to questions asked him by the class, and to elicit the desired answer from the reader or from some other member of the class by the Socratic method of asking questions that will ultimately bring out the wished-for information. This method keeps a class alert and interested, and makes the student think. A conference thus conducted is both a lecture and a recitation, with an actual case or cases for a text, with this difference, however, that the leader and the class chiefly do the talking, while the instructor guides, controls, assists. In my experience this method of case teaching has proved very profitable. It does not seem to me that it should take the place of the didactic lecture and the recitation; but I believe it to be a valuable adjuvant to the older methods of teaching.

DR. C. B. PORTER: I have had no experience in this case teaching as represented to-night, but President Eliot spoke of the subject of section teaching. In that, I have had experience some years. It has seemed to me most valuable, and one I hope will be introduced more fully in the future study of clinical surgery. There is another exercise I have conducted a number of years, which, it seems to me, is bringing the students in direct contact with the patient; that is what is called in the catalogue the diagnosis clinic. A certain number of cases are selected and brought into the amphitheatre and two or three or four students are assigned to examine those cases with great care, have nearly three-quarters of an hour to do it, and the other students can see the cases. Then the students to whom they have been assigned are asked to give the history, diagnosis and treatment, and the class are invited to criticise or ask questions, and I finally tried to clear up any of the doubtful points in connection with the diagnosis. The one thing that has been gratifying to me is that whereas in the spring my conference dwindles somewhat in numbers, this class always increases. Year after year when the men are "cramming" for examinations, I say: "Do you want another week?" And they raise their hands and say they will come, and that to my mind has been the most satisfactory part of my teaching for a number of years.

DR. P. C. KNAPP: I have a little fear that, in the enthusiasm which this form of the method is exciting, we may lose sight of the other most important factor. As yet I have not adopted this form of the case system, so that I cannot speak from experience of its merits or demerits; but we must first teach the student how to observe, so that, by this method, there is considerable danger of slighting the instruction in the observation and the actual examination of the living patient, in which, in my experience, I have found the students of the fourth year, as they came to me, sadly deficient. Men come with quick, correct knowledge, which they may derive from this case system, in just what diseases we find the knee-jerk is present or absent, or in just what diseases there is reaction of degeneration, and yet these same men are quite incapable of making any accurate observation of the knee-jerk or the electrical reactions. That is an element in our teaching which must be accomplished before the case teaching can be brought fully into play.

DR. G. L. WALTON: The special form of conference suggested by Mr. Cannon appeals to me strongly.

I allude to the distribution among the students of sheets containing the history of an actual case, with unrestricted opportunity to study the case for perhaps a week, followed by a general debate. This exercise should supplement, not supplant, the clinical lecture, and the practical instruction in physical diagnosis and history taking. Its use is best adapted, perhaps, to an advanced period in the course, its object being to crystallize the knowledge obtained through other sources. The clinical conference, as ordinarily practised, is a step in the same direction, and serves to make the student conducting it thoroughly familiar with his subject, but in this form of conference there is a certain lack of interest and of stimulus to original thought for the other students. The exercises of Dr. Green have the decided advantage over the usual variety of conference that the case presented by the student is selected with special reference to the familiarity of the other students with the subject. The peculiar advantage of the special method advocated by Mr. Cannon is that the students have all become familiar with the details of the same case, and have the attitude rather of consulting physicians than that of the physician whose opinion is asked upon a case in the practice of another physician, a case which he has neither seen nor had opportunity to study. Again, the student learns by this method to use text-books as they are really used in practice. The student has learned, for example, that tumor of the brain is accompanied by headache, vomiting, and a long list of other symptoms, including optic neuritis; he has learned similarly the symptoms of abscess of the brain, with the statement that optic neuritis is rarely present; this knowledge first becomes fixed in his mind by the study of an actual case which suggests both tumor and abscess, the symptom optic neuritis being perhaps absent; the text-book is now consulted with a new interest regarding the frequency of optic neuritis in each of the diseases suspected.

It has been objected to this plan that the student must depend upon another's physical examination and history. This objection implies that such a conference is expected to replace instead of to supplement other modes of instruction. President Eliot has referred to the three main aims of education: (1) Training the observation; (2) teaching how to record observations, and (3) practice in drawing logical inferences. It is to the third of these functions that this method is especially adapted; it assists perhaps also in the second, and it is fair to add that the interest stimulated leads to more careful observation in the next analogous case, thus indirectly strengthening the first. In the single experience which I have had with this method the interest in the subject was lively, and the case was sifted more thoroughly than any other in the course.

Dr. A. H. Wentworth: From the remarks which have been made this evening there seems to me to be a tendency to regard the case method as a substitute for section teaching. As Mr. Cannon has said, the case method of teaching can never replace the actual examination of patients. It is simply intended to supplement section teaching. The ability to make an accurate physical examination can be obtained only by long practice. The knowledge thus gained is essential in order to make correct deductions. It is necessary, therefore, that each student should have a great many opportunities to examine patients. This can be accomplished only by means of section teaching. There can be no doubt that the case method of teaching will prove to be of the greatest value, but in my opinion it should be taught in the fourth year and not in the third.

AMERICAN CLIMATOLOGICAL ASSOCIATION.

Seventeenth Annual Meeting, held at Washington, D. C., May 1, 2 and 3, 1900.

FIRST DAY.

The meetings of the Association were held in the banquet room of the Arlington Hotel. The first session was called to order by the President of the Association, Dr. Abraham Jacobi, of New York, on Tuesday, May 1st, at 10 A. M., who delivered the opening address on

HEART LESIONS IN INFANCY.

He cited cases which had come under his observation showing that functional heart murmurs do occur in infants under two years, some noted authorities to the contrary. Extracardial murmurs are very infrequent under two years. When deposits are near insertions of the valves, no murmur may be heard at all. Endocarditis is frequent at an early age, but compensation is quite readily established.

The following papers were read by title:

"The Modern Physician's Duty to his Tuberculous Patients," Dr. Frederick I. Knight, of Boston.

"The Construction and Management of Small Cottage Sanatoria for Consumptives," Dr. Arnold C. Klebs, Chicago.

Dr. R. C. Newton, of Montclair, N. J., gave a

REPORT OF CERTAIN CASES OF TUBERCULOSIS WHICH WERE APPARENTLY DUE TO THE NATURE OF THE SOIL.

He gave a history of four families whose family history showed no tuberculous taint, but who had several cases of it in the family after living in damp houses, or houses with damp cellars. The tubercle bacillus may be found in healthy organisms, which can resist it. Let the subject's vitality be lowered and his resistance decreased, and he is much more susceptible to infection; damp places tend to do this, hence the danger. It is far easier to remove the conditions causing the disease than to cure it when it has a start. The problem is that of improving surroundings and sanitation. Good drainage has been shown by statistics to decrease tuberculosis; no climate, however good, is proof against filthy soil. Houses should have dry cellars and sandy subsoil, and be away from swamps.

Dr. Leonard Weber: In New York we find it is not so much the soil as the crowded condition of the people and their unsanitary ways of living that cause the spread of the disease by rendering the soil of the body good for the attack of the bacilli. Dampness does not increase danger of infection, but decreases powers of resistance. The paper showed the necessity of getting rid of the overcrowded tenements.

Dr. N. S. Davis said that acquired tuberculosis is most favored by poorly ventilated rooms and imper-

fect exercise, and badly ventilated lungs, which need ventilation as well as rooms.

Dr. C. L. Turner spoke of the great neglect of proper hygienic and prophylactic measures among all classes in this country, and urged that it was the duty of the physician to look after his patients in these respects while they were well, as much as to attend them when actually sick.

Dr. E. R. Baldwin: Moisture keeps the tubercle bacillus alive, and drying kills it; this may also enter into the cause of tuberculosis among those living in damp houses.

Dr. Judson Daland spoke of the recent appearance and rapid spread of consumption in Iceland, attributing this to the dampness, fog and winds.

Dr. Newton ended the discussion by illustrating from his own experience how moisture could collect under the floor of a tent close to the ground, even in a very dry locality.

Dr. Charles Denison, of Denver, read a paper entitled

EDUCATIONAL AND LEGISLATIVE CONTROL OF TUBERCULOSIS.

He discussed at some length the degenerative effects of deficient ventilation and defective heredity, and showed how this condition, by inducing deficient pulmonary air and blood circulation, leads to auto-infection. He took a sample room, such as most persons occupy, and pointed out the usual defects in ventilation, then passed on to a discussion of what he termed the "life of the air," which he said exists chiefly in its motion, which, with its light, heat and electrical power, comes from the sun, and the force of which is annulled by the imprisonment of the air through defective ventilation. Thus a gradual loss of vitality is brought about. This is the unified predisposing cause, anterior to the bacillus of tubercle, which will explain alike the origination of tuberculosis in animals, fowls and men. Dr. Denison closed by urging legislation requiring proper ventilation, courses for the study of methods of ventilation in all advanced schools and colleges, and governmental investigations as to the best ways and proper and necessary limits to ventilation.

Dr. B. Robinson spoke of women's long skirts being an important factor in the spread of the tubercle germs.

Dr. C. E. Edson said that the bacillus alone, dampness alone, or bad ventilation alone, would not produce the disease.

Dr. W. F. R. Phillips said that the changes in the life of the air were attributed by some to increased temperature and humidity and presence of CO_2.

Dr. S. G. Bonney, of Denver, read a paper on

SOME PHASES OF THE TUBERCULOSIS PROBLEM IN COLORADO.

In this paper the author pointed out the injustice done to Colorado by statistics which apparently showed an increase in the number of those becoming consumptive in that State, and showed that the actual increase was very slight. He noted the number of tuberculous children, and the comparative frequency of tuberculous meningitis. The influx of consumptives from other States complicates the problem.

Dr. J. C. Wilson said that often climatic treatment was available in the region where the individual lived, without the risk and expense of a long trip.

SECOND DAY.

In the absence of Dr. Jacobi, Dr. Babcock, of Chicago, opened the meeting.

Dr. Arnold C. Klebs, of Chicago, who was not present at the first session, when his paper was due, read a paper on

THE CONSTRUCTION AND MANAGEMENT OF SMALL COTTAGE SANATORIA FOR CONSUMPTIVES.

He said that the chief purpose of small sanatoria was to scatter institutions for consumptives throughout the country, and their chief advantages the wholesome, regulated diet, arrangements for an abundance of fresh air, cheerful surroundings and proper exercise. He advocated making the exercise of a useful but mild character, like gardening. The sanatorium should be located in the best possible spot, and near a large city, where good markets are available. The speaker then gave a sketch of how such cottage sanatoria should be built, and showed diagrams of some already in operation. The usual plan is to have a long building forming an obtuse angle, the part within the angle forming a sheltered court with porches, and suitable as a place for outdoor exercise for the patients, or two or three cottages connected by galleries adapted to our double season, enclosed and sunny in winter, and with removable sides and roof for summer. The management should be under one skilled head, with authority over the patients, and the patients should have practical hygienic instruction.

Dr. H. P. Loomis called attention to the immense expense of the plan suggested, which was all right for people of means, but impracticable for the majority. He further said there was no doubt as to the advantages of the sanitarium treatment, and deplored the fact that we in this country were so far behind other countries in this respect.

Dr. C. F. McGahan advocated very small sanatoria, where the doctor in charge can see each patient at least twice a day, and personally supervise their habits and exercise. He said it could be done for eight to nine dollars a week per capita.

Dr. E. O. Otis believed that the future treatment of tuberculosis would be by sanatoria, and stated that a year ago Massachusetts voted $175,000 for a sanatorium, and had just recently voted $150,000 more to build another.

Dr. Edson also objected to the plan proposed by Dr. Klebs, on the ground of expense, and suggested that every doctor could carry out the sanitarium principle, by a one or two patient sanitarium, located in a carefully selected house under proper management.

Dr. Baldwin stated that at Saranac the expense per capita was from seven to eight dollars a week, but that Dr. Trudeau did not receive any compensation out of this.

Dr. Newton thought that it would be a good thing for those of little means with incipient tuberculosis to go on four or six weeks' tramping tours under a competent head, as this sort of outdoor life would stimulate the vital functions.

In rebuttal to the objections to his plan on the ground of expense, Dr. Klebs said the project he proposed was merely a cheap boarding-house, three cottages connected by galleries and built with a special view to their use.

Dr. H. P. Loomis, of New York, gave

SOME PERSONAL OBSERVATIONS ON THE EFFECT OF INTRAPLEURAL INJECTION OF NITROGEN GAS IN TUBERCULOSIS.

He described how, after numerous experiments on animals with all sorts of materials, fluids and gases, he at last found nitrogen to be the only one that did not rapidly absorb, or cause some other trouble. Dr. Loomis claims for the method that the injection of from 50 to 200 cubic inches of absolutely pure gas will not be absorbed for from three to six months, will rapidly diminish expectoration, improve appetite, increase weight, and above all stop hemorrhage, where all other methods fail, but it seems to have no marked beneficial effect on the affected lung substance. It arrests the further progress of the disease.

Dr. H. L. Taylor said that he had tried the method in over a dozen cases, and had obtained exactly opposite results from those given by Dr. Loomis.

Dr. R. H. Babcock expressed his surprise at Dr. Taylor's results, and said that the results in the majority of cases treated in Chicago were good. He believed the treatment was of value in giving the patient an upward start to health.

Dr. Denison asked if the same results could not be attained by some other method, unattended by such a shock, and referred to the successful use of strapping plaster to stop hemorrhage.

Dr. Stubbert said the nitrogen treatment was only effective when the lung was absolutely compressed, and stated that he also had used it with advantage to stop hemorrhage.

Dr. Boardman Reed, of Philadelphia, read a paper on

STOMACH CONDITIONS IN EARLY TUBERCULOSIS.

He summarized his paper as follows: (1) In early tuberculosis the secretion of HCl is very frequently excessive, the peptic glands being in a condition of irritability which causes stimulating remedies of the creosote class to disagree and act injuriously; (2) oils tend to depress the secretory function of the stomach and in consequence cod-liver oil is likely to help the cases which the creosote class of drugs hurt, but, on the other hand, hurts the cases in which the gastric secretion is inactive, and the other ones in which creosote and its congeners often do good; (3) therefore it ought to be the rule to ascertain the condition of the secretory function of the stomach before pushing either class of drug; (4) when analysis of the gastric contents cannot be made, it is safer to combine creosote with cod-liver oil, so as to let one neutralize the other in its effect on the stomach; (5) the motor function is very generally depressed in tuberculosis, and must be restored before a cure can be effected. Drugs avail little in this direction, but diet, exercise, especially in the open air, faradism and abdominal massage, except where hyperchlorhydria complicates it, are the most valuable means of effecting the result.

Dr. Anders called attention to the variability of HCl in this disease, and said that gastric symptoms depended on functional disturbances.

Dr. J. Edward Stubbert, of New York, gave the

SUBSEQUENT HISTORY OF PATIENTS APPARENTLY CURED BY ANTITUBERCLE SERUM.

He took up the cases he reported two years ago, and said there had been no relapses, and marked improvement in 78 per cent. of the cases. He then took each case in detail and gave the history up to date. Dr. Stubbert spoke of the difficulty of treating patients climatically, on account of the varying effect of the serum in varied localities.

Dr. R. C. Curtin, of Philadelphia, read a paper entitled

THE PHLEBITIS OF ADVANCED PHTHISIS, WITH REPORT OF CASES OF PHTHISIS FOLLOWING ABSCESSES OF THE HAND.

He gave several instances of phlebitis following tuberculosis, and quoted numerous cases where tuberculosis followed blows and falls, noting especially the prevalence of the disease among prize fighters.

Dr. Newton asked for statistics as to phthisis, and denied that the percentage was at all large.

Dr. Curtin, Dr. Babcock, Dr. Anders and Dr. Bridge all instanced cases of the same and similar conditions that had come under their notice.

Dr. J. M. Anders, of Philadelphia, read a paper on

THE DIAGNOSTIC VALUE OF TUBERCULIN IN TUBERCULOSIS.

He said that the value of the tuberculin test depended on the fact that it permits the recognition of the disease in its latent as well as incipient forms, and if it were used, more tuberculosis would not so often go unrecognized. Of over 2,000 suspected cases, 71.8 per cent. gave positive reaction, and of the undoubted cases the percentage was even higher. The two points in its use are moderate doses and its use in incipient stages of the disease. If this were done its use would become more popular and satisfactory.

SPLENOMYELOGENOUS LEUKEMIA WITH PULMONARY TUBERCULOSIS; REPORT OF A CASE.

This paper, by Drs. H. L. Elsner and Wm. A. Groat, of New York, was read by title. Dr. Elsner stated that the condition was very rare, and showed charts illustrating the case.

At the business meeting which followed, the following officers were elected for the ensuing year: President, Dr. R. H. Babcock, of Chicago; First Vice-President, Dr. A. C. Peale, of Washington, D. C.; Second Vice-President, Dr. S. W. Langmaid, of Boston; Secretary and Treasurer, Dr. Guy Hinsdale, of Philadelphia. Dr. Abraham Jacobi was elected a member of the Council.

THIRD DAY.

On account of the number of papers still to be read, the meeting was called for at nine o'clock. The session opened with a discussion of Dr. Anders's paper on the diagnostic value of tuberculin, which closed Wednesday's session.

Dr. Brannan opened the discussion by asking what the exact reaction of tuberculin was, beside the "grippy" symptoms it produced.

Dr. Charles Denison objected to the use of tuberculin in large doses in advanced phthisis, on account of its disintegrating influence on the affected lung area, and said that the starting dose in the Berlin Hospital was one-half milligramme. Tuberculin might produce local reaction even when there was no rise in temperature, and in small doses it sometimes increases the number of râles.

DR. H. L. TAYLOR objected to the statement that we should not use tuberculin as a therapeutic measure, saying that it often had some therapeutic value.

DR. A. C. KLEBS emphasized the importance of a uniform preparation of tuberculin, in order that the results of different observers might be compared with some advantage. He said there was no danger to the patient in cautious use of tuberculin, and that a beginning dose could be as low as one-tenth milligramme.

DR. E. O. OTIS brought up the fact that syphilis often gave the reaction when advanced tuberculosis would not.

DR. BABCOCK asked why he could not always suspect syphilis if that disease gave the reaction. He said that dose might be from one-half to twelve milligrammes, and in the average case should be large.

DR. BALDWIN said that tuberculin was rarely necessary for diagnostic purposes. Larger doses are necessary for local tuberculosis in joints and other parts of the body than in pulmonary cases. He called attention to the tuberculin reaction in syphilis as a fruitful field for investigation.

DR. J. H. KELLOGG, of Michigan, read a paper on

THE HYDRIATIC TREATMENT OF TUBERCULOSIS.

He urged the value of cold-water treatment, saying that he had used it for over twenty-five years, with good results and many recoveries. Out of 151 cases noted more than 60 per cent. were permanently benefited, and a good percentage cured. The tonic effect of cold water is due to the action of the cold on the sympathetic nerves in the skin, and increased cerebral activity. The method of its use is very simple: first, friction with hand or dry towel; then sponge or mohair glove wet with ice water and rubbed briskly on neck, chest and arms, one part at a time, and quickly dried, and patient bandaged with wide three-yard strip of cheese cloth, and over this same-sized flannel. In full bath start with moderate temperature and gradually reduce to 55° or 45°. Dr. Kellogg then gave a demonstration of his method on a subject.

DR. C. L. MINOR urged necessity of simplification of methods, such that the patient could apply them himself.

DR. R. H. BABCOCK protested against the use of the term "cured" as a result of the cold-water treatment, and DR. KELLOGG replied that water was not claimed to be a panacea, but merely a valuable adjunct to other methods.

DR. W. D. ROBINSON, of Philadelphia, read a paper entitled

PETROLEUM OIL IN THE TREATMENT OF PHTHISIS.

He said that the best preparation was a repurified oleum petrolatum of the United States Pharmacopeia, which is absolutely odorless, colorless and tasteless. The oil passes through the intestine unchanged, but has beneficial effects on nutrition. It has also the effect of rendering the intestine unfavorable to life of micro-organisms by starving and suffocating them, by cutting off the avenues through which they have their nourishment. The oil has beneficial effects in chronic bronchitis and in phthisis, and there is more gain from its use than from cod-liver oil, without any tax on digestion, appetite or food assimilation. It is valuable as a solvent for many drugs and as a means of conveying intestinal germicides.

DR. A. N. BELL, of Brooklyn, read a paper entitled

STAMINA: THE SPECIAL BENEFIT OF FATS OF ONE KIND OR ANOTHER AS A NECESSARY ARTICLE OF DIET TO FORTIFY THE SYSTEM AGAINST TUBERCLE BACILLI.

The speaker endeavored to show that, other conditions being equal, tuberculous diseases are prevalent in an inverse ratio to the use of fat of some kind as an article of diet. It must, however, be remembered that in persons on the verge of pulmonary consumption inability to digest fatty food is one of the most prominent symptoms. The freedom of Iceland and other cold countries from consumption he attributed to the abundance of fat in one form or another that the inhabitants consume, and the recent increase of the disease in Norway he thought probably due to the increased consumption of farinaceous food. Fat is needful, and that kind most easily digested is best.

DR. S. E. SOLLY said he thought tuberculosis in Iceland was due to its importation from Norway. He agreed with the speaker that fat was a very desirable article of food.

DR. S. E. SOLLY, of Colorado Springs, read a paper on

THE BLOOD CHANGES IN HIGH ALTITUDES.

He took statistics of blood counts from twenty-five students as a basis, and showed that in people going to Colorado the red cells and hemoglobin at once increases quite above that of the natives, but that in those who have been there for two years or more the blood count shows an intermediate position, which would seem to indicate that the climate soon loses its marked beneficial effects on the blood.

DR. R. C. NEWTON thought that the effect of tuberculosis on the blood was a good field for investigation.

DR. HAROLD WILLIAMS, of Boston, reported

A CASE OF MURAL ENDOCARDITIS

in which the remarkable features were the absence of pain, absence of murmur, and peculiar grouping of pathological lesions found at the autopsy held by Dr. Leary.

DR. BABCOCK said that a murmur was only a guide post to point the way to the trouble, and is of comparative unimportance in functional disease, where we must rely on the secondary symptoms. The presence or absence of murmurs in any given case will depend on the size of the orifice.

DR. J. MADISON TAYLOR, of Philadelphia, read a paper entitled

EXERCISES SUITABLE FOR CHILDREN SUFFERING FROM HEART DISEASE.

He said the embargo so often laid by the physician on all kinds of exercise in cases of this sort was often actually injurious, and showed how frequently when these children have been allowed increasing amounts of activity an actual benefit results. Carefully selected exercises can be made to afford a large amount of relief to many of the distressing symptoms which accompany and follow upon disordered states of the heart. The writer defines exercise as "the normal use of the bodily parts, not merely of the muscular system, but particularly the interrelation of the

viscera, abdominal and thoracic, and their mutual co-operation." Dr. Taylor then emphasized the necessity of standing erect, and of proper attitudes, and the value of enforced breathing after a definite system, the rules of which he gave. His experience with children has convinced him that the most remarkable results may sometimes be obtained by the simplest forms of exercise.

DR. A. JACOBI said that in both acute and chronic cases of heart disease rest in bed was good, but that a watch must be kept that the rest was not prolonged too long. He agreed with the speaker as to the value of passive movements, and that the peripheral circulation can be fortified by some form of exercise. We must remember that in each individual there are from thirteen to fifteen square feet of skin, and if the circulation here is not attended to the heart has to suffer. Massage is a good treatment, but should only be done by a doctor or one who knows the courses of the blood and lymph channels.

DR. JUDSON DALAND, of Philadelphia, read a paper on

ANEURISM OF HEART; THROMBOSIS OF LEFT CORONARY ARTERY.

The speaker described a case of aneurism of the heart, characterized by absence of angina pectoris, and marked fibroid changes of septum of heart, with endarteritis of coronary arteries. The patient was a man over fifty, and with a four-year history of heart disease, though quite well at the time of his fatal attack, which lasted twenty hours.

DR. R. G. CURTIN said cases of aneurism of the heart die quite slowly. He had seen a case where the sac would contain a pint of fluid.

DR. J. M. TAYLOR spoke of a case where there was a large sac, the treatment being gold wire and electricity, which did some good, the patient finally dying slowly from exhaustion.

DR. R. H. BABCOCK said that sudden death in the cases where fibroid changes of the heart septum were present was frequent.

The following papers were read by title:

"The Inadequacy of the Physical Signs as Indicating the Gravity of Pneumonia," DR. ANDREW H. SMITH, of New York.

"The Bath in Gout," DR. CHARLES C. RANSOM, of New York.

"Prognosis in Disease of the Heart," DR. JAMES B. WALKER, of Philadelphia.

"Some Thoughts on the Nervous System in Phthisis as a Basis for Treatment," DR. THOMAS J. MAYS, of Philadelphia.

Recent Literature.

A Hand-Book for Nurses. By J. K. WATSON, M.D., (Edin.)., Late House Surgeon, Essex and Colchester Hospital, etc. American edition under the supervision of A. A. STEVENS, A.M., M.D. Philadelphia: W. B. Saunders. 1900.

This is a compact, well-bound volume of 413 pages on a familiar subject. The book is eminently practical and should certainly prove of use to the class of readers for whom it is primarily intended. The problem of how much a nurse should be taught seems to have been fairly met by the author.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, MAY 31, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.

COMPULSORY NOTIFICATION OF TUBERCULOSIS.

THE recent action of the Boston Board of Health, that hereafter pulmonary and laryngeal tuberculosis shall be included in the list of diseases of which compulsory notification is required, is a measure which demands more than a passing notice. The tendency of the past few years with regard to the whole matter of tuberculosis, and in accordance with scientific investigation, has been to mark it out more and more as a disease demanding the same rigid vigilance as other infectious or contagious diseases, to prevent its transmission to others not previously affected. This has led to isolation hospitals, to scrupulous care regarding sputum, excreta and personal hygiene, and in a few instances to even more radical measures, as, for example, the attempted exclusion of tuberculous persons from certain States and cities. Much of this precaution is absolutely demanded by the knowledge which the last few years has given us, and it is most earnestly to be hoped that the dissemination of information regarding the nature of the disease will in time tend to render its victims in all walks of life conscious of the menace they may be to their neighbors. This has already in a certain measure been accomplished, and anything tending to bring about a deeper realization of the lesson is to be regarded with favor. It is a matter of education, which each physician who is brought into contact with tuberculosis among the ignorant can do his share in developing.

On the other hand, it must be borne in mind that over-enthusiasm in the prosecution of a plan for the improvement of the public health may be misinterpreted and thereby defeat the end to be attained. The somewhat recent attempt to institute a quarantine against tuberculous patients in some of the Western States met with the condemnation which it was the general opinion of the medical press it deserved. In theory, it is no doubt highly desirable that tuberculosis should be blotted off the face of the earth; in practice, it at once appears that the rights of the individual cannot be infringed because he happens to

be suffering from a disease which under proper precautions is not a real menace to his fellow-men. This attempt at legislation marks the extreme of radicalism, and undoubtedly, in the nature of the case, will never meet with popular favor. Nor has such attempted action been conducive to a more reasonable attitude on the part of the laity, and one calculated to lead to the ultimate extermination of the disease. An undue fear of contagion is no doubt as deleterious as an undue carelessness, and baseless fears are easily excited by the promulgation of general edicts, not carefully guarded by critical explanatory details. We quote, for example, part of an editorial comment which has recently appeared in one of the daily papers:

"A few towns, within twenty-five miles of Boston, could be named which have become resorts for the victims of this disease (tuberculosis) in its earlier stages, so that a fairly large proportion of the residents of these towns should be subject to rule of sanitary precaution. Yet the boards of health in these towns have done little, if anything, to protect the rest of the population. If a batch of scarlet-fever patients should invade the same towns, probably something like a panic would follow. Yet the chances are that the danger of contagion to the general public would be less, as scarlet-fever patients are not usually allowed to go wherever they please."

This is clearly an exaggerated statement of alarm, based on insufficient knowledge of the nature of tuberculosis and the laws governing its contagiousness. It is wholly misleading to compare tuberculosis with scarlet fever, and surely the "danger of contagion to the general public" is infinitely small in a healthy country town.

This leads us to the recent action of the Boston Board of Health with regard to the compulsory notification of tuberculosis. In the first place, the general agitation which has finally led in Boston to this result has been going on for some years. As long ago as 1894 an editorial appeared in these columns in the issue of March 24th, under the title, "The Registration of and Preventive Measures against Tuberculosis," apropos of similar contemplated action in Philadelphia. The lapse of six years has not materially changed the situation with regard to the general question, and we are inclined to reiterate what we then said of a law demanding compulsory notification. Our point of view at that time we stated in the following words: "A law may be good in the abstract, but it is practical only in so far as it secures the co-operation of the community which it affects to such an extent as to permit its enforcement without excessive annoyance and expense; moreover, no law is good which causes more harm to society than it cures. The same may be said of the registration or notification of such a disease as tuberculosis, and of the adoption of general preventive measures against it. Nobody would advocate dealing with tuberculosis as with leprosy."

It goes without saying that we are in complete sympathy with any action of our health boards which will effectually lessen the mortality from any disease whatever, provided only that too great injustice be not done to individuals. It is, however, clearly necessary to recognize the difference in diseases, as regards course, whether chronic or acute, whether extremely or only very slightly contagious, and whether avoidable only by rigid quarantine or by less extreme measures. As regards tuberculosis, it must be remembered that it is a disease usually of extremely slow course, liable to remissions and to cure in many cases, and also one about which families and individuals are sensitive. It is likely therefore, on the one hand, that a somewhat undue importance will be attached to the danger of contagion, and, on the other, that concealment and evasion of the regulation of notification will be practised to a much greater extent than in other diseases. We shall look forward with interest to the results of the new regulation, and trust it may prove as efficacious as its promoters hope; at the same time we think there are certain contingencies to be met which do not exist in a similar regulation applied to other diseases.

PROPRIETARY MEDICINES AND THE PHARMACOPEIA.

A PAPER of much general interest was read at a recent meeting of the University of Pennsylvania Medical Society by Dr. A. W. Miller on the subject of "Proprietary Chemicals," and reported in abstract in the *University Medical Magazine*.

In 1890 the pharmacopeial convention resolved that "no substance which cannot be produced otherwise than under a patented process, or which is protected by proprietary rights, shall be introduced into the Pharmacopeia." This statement represented the consensus of opinion of the pharmacists and physicians present with regard to the use of patented preparations. In spite of this fact the sale of such patented articles continues, with small evidence of abatement. No one questions that many of these preparations are excellent, and are put out by highly reliable and trustworthy firms; it is perhaps not so generally known that many of the drugs and compounds which have had and are having an extensive sale may be found in the Pharmacopeia, under somewhat different names, but still corresponding entirely to proprietary drugs or mixtures of drugs. The further point should also be borne in mind that these same drugs, as found in the Pharmacopeia, are, as a rule, very decidedly cheaper than when put out under some proprietary name, a matter which the practitioner is bound to consider. Cases of interest in this connection are: Antipyrin, which was originally made under a patented process, and hence was excluded from the Pharmacopeia of 1890. Later, when it was generally manufactured, the price at once fell, and with it, curiously enough, the consumption, owing to lessened advertisement. Antifebrin, which is identical with the official acetanilid, al-

though ten times as expensive, continued to be sold extensively as long as advertised. "Dermatol" is bismuth subgallate, but as "dermatol" the price has been kept high, and the drug sold in large amounts. Aristol has had a like experience.

These are some of the examples brought to our notice by Dr. Miller. The makers of these so-called proprietary preparations are honest; they depend upon physicians in good standing for the ultimate sale of their products, and their preparations, many of them, are good. They are, however, usually expensive, a fact which the physician often overlooks, or is ignorant of. As a matter of fact it too often happens that physicians do not know in detail what they are prescribing, and are often too busy, or too willing to take the testimony of others, to find out. Pharmacology is a science of which the specialist is alone a master; the preparation of drugs for the market is an art to which the physician has neither the time nor the desire to devote himself. The natural result is that in his relative ignorance he uses the products of others who claim special skill, without further enquiry. Hence the general acceptance and wide employment of proprietary preparations coming from reputable manufacturers. So far as we can see into the future it appears that this situation will not be materially changed, however much it may be deplored, until the rank and file of physicians the country over take it upon themselves to cultivate a knowledge of pharmacology, which is now conspicuously lacking. How far this is possible is an open question, upon which we do not venture an opinion.

MEDICAL NOTES.

Plague. — There have recently been reported several cases of suspected plague in Manila, occurring among persons living in unhygienic buildings, which will probably be burned. The feared outbreak of plague at Durban has subsided, and danger of an epidemic is past. From Rio Janeiro reports come of many cases. In one day there were 13.

Japanese Protest on Compulsory Inoculation against Plague. — Through its chargé in Washington, the Japanese Government has joined the Chinese Government in a protest against the compulsory inoculation of Japanese and Chinese in San Francisco with antiplague serum, on the ground that if such inoculation were necessary to prevent the extension of the plague, it cannot be contemplated that any discrimination should be practised against the Japanese and Chinese; the rule must be general, and include Caucasians as well as yellow men.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the six days ending at noon, May 29, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 69, scarlatina 37, measles 91, typhoid fever 8.

Death Statistics of Boston. — The total number of deaths reported to the Board of Health for the week ending May 26th was 200, against 203 the corresponding week last year, making the death-rate for the week 18.8. The deaths from consumption were 21, pneumonia, 31, heart disease, 20, bronchitis, 2, and marasmus, 6. There were 11 deaths from violent causes. The number of children who died under one year was 37, the number under five years, 59. The number of persons who died over sixty years of age was 49. There were 61 deaths in public institutions.

A New Strength Record. — Charles A Carver, a Yale student of the Class of 1900, has recently surpassed the strength record of his rival, Cochems, of Harvard, by making a total record of 2,073.2 points, an increase of 263.3 points over his own previous record.

NEW YORK.

A Means of Reducing Mortality Statistics. — It is well known that the various private hospitals, in order to keep their death-rate at as low a figure as possible, are in the habit of sending their ambulance cases in which the patient is likely to die to Bellevue Hospital. An especially flagrant instance of this occurred one day last week. An ambulance was summoned from Roosevelt Hospital to the case of an old woman who was in a dying condition from combined renal and cardiac disease. The surgeon in attendance, instead of taking her to his own hospital, which was about half a mile distant, ordered the ambulance driven to Bellevue Hospital, more than two and a half miles away, and before the hospital was reached the patient was dead.

Cornerstone of Beth Israel Hospital Laid. — The cornerstone of the new Beth Israel Hospital was laid on May 27th, and among those who made addresses on the occasion were Drs. A. Jacobi and Zinsler and Charities Commissioner Keller. This institution, which was founded in 1890, is at present located on East Broadway. The new situation, at the corner of Cherry and Jefferson Streets, is in the heart of the East-Side tenement district, the most densely populated locality in America. The building will be five stories high and will have accommodations for over 100 patients, in addition to ample dispensary facilities.

Confessions of Persons Charged with Capital Crimes. — The Medico Legal Society, on behalf of its Psychological Section, recently gave a dinner to Dr. Thomas Jay Hudson, of Washington, D. C., who made an address in which he deprecated the admission by the courts of confessions of guilt on the part of persons charged with capital crimes. By the process of suggestion, made with sufficient vigor and persistency, he said, it was just as easy to get a confession from an innocent person as by the medieval system of torture.

Death of the Dwarf, McTague. — John McTague, a dwarf fifty-one years old, recently died at

the almshouse on Blackwell's Island, of which he had been an inmate since 1867. He was only three feet tall and weighed forty-five pounds. He had been accustomed to do various little tricks for the amusement of visitors to the institution, and the autopsy showed that death was due to the lodgment in the intestine of a penny which he had swallowed.

Sub-Committees of the Tenement House Commission. — At a recent meeting of the Tenement House Commission the following sub-committees were appointed: (1) An executive committee; (2) on tenement house construction; (3) on the moral and social relations of tenement house life; (4) on tenement house labor; (5) on the tenement house problem in Buffalo.

Annual Report of Roosevelt Hospital. — The twenty-eighth annual report of the Roosevelt Hospital has just been published. Of 2,752 patients treated during the year only 411 were paying patients. During the past twenty years five different departments have been added, and it has been necessary to increase the number of employés from 59 to 200.

Bequests for Medical Charity. — By the will of the late Myrick Plummer, $5,000 is left to the Presbyterian Hospital for the endowment of a memorial bed, and $10,000 to the New York Diet Kitchen Association.

Death of a Centenarian. — Miss Sarah Pettit died at Flemington, N. J., on May 21st, at the age of one hundred years. She was born near the village of Flemington on March 5, 1800.

Miscellany.

BACTERIA AND THE BURIED ANIMAL BODY.

The German Government has conducted experiments with reference to the behavior of bacteria in buried animal bodies, which are reported upon by Professor Petri, and by Staff Surgeon Löseners in the reports of the Imperial Board of Health, and are referred to in the Journal of February 27, 1896, under the title of the "Effect of Cemeteries on Health." Dr. Klein has conducted a series of experiments in England with a similar end in view, upon which the chief medical officer comments as follows:[1]

"The extent to which graveyards and cemeteries may, through the medium of the underground water yielded by wells and springs in their neighborhood, contribute dangerous contamination to water supplies, has been an ever recurring subject of dispute. On the one hand chemistry has found that the water draining below ground from graveyards is apt to contain abundantly in solution dead organic matter derived from the corpses undergoing dissolution in the superincumbent soil; and as a consequence the chemist has been prone to condemn such water as a source of domestic supply. On the other hand bacteriology, while showing abundance of bacteria in drainage water from graveyards, has failed to afford evidence that the micro-organisms derived from the graveyard are at all commonly identifiable with microbes capable of inducing in the human subject specific disease. In the circumstances it has been judged profitable to subject to bacterial test actually buried bodies, in order, in the first place, to ascertain the nature (whether or not harmful) of the bacteria proper to graveyards, those, for instance, which prey, so to speak, on corpses, and further, to ascertain the fate in graveyards of pathogenic microbes which, having multiplied in the animal body during life, are, after death of that body, buried along with it in soils of different sorts."

Dr. Klein gives an account in regard to rodents buried by him in diverse ways in different soils, of the bacteria, adventitious or other, which are chiefly concerned in the disintegration and dissolution of the dead animal body. Also he records, in reference to similar experimentally buried animals, the ultimate fate of certain pathogenic bacteria, which, previous to death, had been made to multiply in the animal bodies in question.

Dr. Klein's observations in both subject matters are thus far reassuring. He does not find that disintegration and dissolution of the animal body after burial is brought about by microbes harmful to man, by aërobic microbes, for instance, such as bacteria of the coli and proteus groups, which are, on occasion, pathogenic to the human subject, and which heretofore have been regarded as the main agents in the putrefaction of dead animal matter. As result of his experiments, dissolution of corpses would seem to be almost wholly an affair of anaërobiosis, and indeed practically the work of a particular anaërobic bacterium that is, in his view, inherent in all buried bodies and which Dr. Klein proposes to term *bacillus cadaveris sporogenes*. Similarly, Dr. Klein finds that under his conditions of burial, and in the presence within the buried bodies of the rapidly multiplying bacillus cadaveris, no single one of a great variety of pathogenic microbes, which during life had been made to proliferate in experimental guinea-pigs, is capable of maintaining its vitality in the decomposing of these animals for a period measured by more than a very few weeks."

In summing up the results of his experiments Dr. Klein makes the following statements:

"Direct experiment lends no confirmation to the general and popular belief that the microbes of infectious disease retain their vitality and power of mischief within dead and buried bodies for indefinite periods. On the contrary, these researches show that, as far as the bodies of the guinea-pig are concerned, the vitality and infective power of these microbes that have been made the subject of experiment passes away in a comparatively short time; that in most cases a month is sufficient for this result, that is to say, long before the coffins containing the buried bodies have shown any indications of leakage. A like result is, however, observed in the case of bodies buried directly (wrapped in a piece of fabric) in earth or in sand. In this case it may be inferred that the vitality and infectiveness of the pathogenic microbes contained in the viscera has passed away long before the outer skin has become permeable by them, and further, the operations of putrefactive microbes effecting their destructive processes from without would be likely to prove a powerful and per-

[1] Twenty-eighth Annual Report of the Local Government Board of England. Supplements. Report of Medical Officer for 1898-99.

haps efficient barrier for such passage outward of pathogenic microbes.

A question of importance which is directly suggested by the results of this inquiry is this: "What is the essential cause or causes of this process of rapid destruction of the vitality and infectiveness of pathogenic microbes in the interior of the dead body? Is it that in the struggle the more favored bacillus cadaveris soon becomes ubiquitous and ousts the others; or is it that some chemical metabolic products elaborated by other more favored microbes, in the course of their growth and multiplication, operate as a poison on the pathogenic microbes? These questions can only be answered, or be attempted to be answered, by further and properly devised experiments."

REPORTS OF PLAGUE IN CALIFORNIA EXAGGERATED.

THE following statement, under date of May 22d, from the Secretary of the California State Board of Health to the Secretary of the Massachusetts State Board of Health has been given to the JOURNAL for publication:

"Reports outside of this State of the existence of bubonic plague here have been greatly exaggerated. The State Board of Health of California has carefully inquired into the facts, and officially reports them to you as follows: There have been nine deaths at San Francisco on the following dates: First case, March 6th; second case, March 15th; third case, March 17th; fourth case, March 10th; fifth case, April 24th; sixth case, May 11th; seventh case, May 11th; eighth case, May 14th; ninth case, May 15th. All the cases were Chinese, found dead in their unsanitary quarters known as Chinatown. That they died of bubonic plague was established by bacteriological investigation by the City Board of Health, and confirmed by Dr. Kinyoun, the United States quarantine officer of the port of San Francisco.

"At this time there are no known cases of bubonic plague in California. The Board of Health of the city of San Francisco is taking every precaution to prevent the recurrence of the disease, with every hope of success. No other part of the State has been nor is now affected. Should any further danger arise we obligate ourselves to immediately notify you of it."

Obituary.

F. N. OTIS, M.D.

DR. FESSENDEN NOTT OTIS, of New York, who was for many years one of the best known syphilographers and authorities on genito-urinary surgery in this country, died in New Orleans on May 24th, in his seventy-sixth year. He was born at Ballston, N. Y., and was graduated from the New York Medical College in 1852. From 1853 to 1861 he was a surgeon on the United States Mail and Pacific Mail steamers. In 1862 he was appointed a police surgeon in New York City and from 1870 to 1872 was President of the Board of Police Surgeons. For many years he was connected with the College of Physicians and Surgeons, the Medical Department of Columbia University, first as clinical lecturer, then as professor, and finally as emeritus professor, of genito-urinary diseases. From 1871 to 1873 he was President of the Medical Board of the Strangers' Hospital, and among the other hospitals at which he served either as attending or consulting surgeon were St. Elizabeth's, Skin and Cancer, Manhattan Eye and Ear, and Charity Hospital on Blackwell's Island.

Dr. Otis invented a number of instruments and appliances in the line of his special work and was also a prolific writer on subjects connected with genito-urinary diseases. In the treatment of stricture he was a strenuous advocate of the enlargement of the meatus by free incision, a point on which his views were regarded as somewhat extreme by many of his colleagues. In 1880 he delivered at the College of Physicians and Surgeons a course of clinical lectures on the physiological pathology and treatment of syphilis, which were specially reported for the JOURNAL, and which were afterward brought out, together with his fasciculus of class-room lessons covering the initiatory period, in a handsome volume by Messrs. G. P. Putnam's Sons. He held that the underlying conditions of syphilitic manifestations are attributable only to excessive localized cell proliferation and accumulation, and that the lesions of the so called tertiary period of syphilis are not the results of the local action of a virus, but are caused through damage to lymph channels in the active period of syphilis (the period of lymphatic obstruction), which finally results in their contraction, producing disturbance of function and nutrition which will account philosophically for all the losses of tissue by necrosis and fatty degeneration which are known to occur in late syphilis.

In addition to his medical writings he published "Lessons in Drawing, Studies of Animals and Landscapes," two volumes (1849-50), "Tropical Journeyings" (1856), and "History of the Panama Railroad and its Commercial Connections" (1860). He always retained a warm love of art, and he had an admirable collection of American pictures, many of which were the personal gifts of their painters.

A few years ago Dr. Otis retired from practice, and since then has spent his time either at his country home at Catskill or in extensive travelling. He is succeeded in his special work by his son, Dr. William K. Otis.

Correspondence.

SWEDISH GYMNASTICS.

BOSTON, May 24, 1900.

MR. EDITOR: — Your editorial notice (April 12th) of Dr. Hough's brochure "A Review of Swedish Gymnastics" overlooked one significant aspect of Dr. Hough's treatment of the subject. To those who have watched the progress of Swedish gymnastics since its somewhat dramatic entrance into Boston, about twelve years ago, and who have noted the claims made by its exponents, it is of the utmost interest to recognize that Dr. Hough bases its special claim to recognition upon the superiority of its corrective work rather than upon its hygienic or educational values. He says, "The most distinctive feature of Swedish work is the fact that it never loses sight of the corrective element. This is its primary purpose," etc.

Dr. Hough's caution to advocates of the Swedish system not to put too much stress upon the so-called Swedish physiology as a basis for the Swedish system is a frank confession, which is as gratifying as it is unexpected. The admissions of incompleteness in the Swedish system, of the unscientific character of some of the most important of its doctrines, and the essential limitation of its usefulness to corrective work, are so sweeping and iconoclastic that I am curious to learn whether they are endorsed by the Swedes themselves. So far as I know they still remain unchallenged. Do the advocates of the Swedish system accept Dr. Hough's statements?

Very sincerely yours,

G. W. FITZ, M.D.

METEOROLOGICAL RECORD

For the week ending May 19th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		We'th'r.*		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S...13	29.85	64	77	50	77	67	72	S.W.	E.	12	2	C.	F.	
M..14	29.95	54	63	45	89	96	92	N.	N.E.	10	6	O.	O.	
T.. 15	29.83	70	83	46	85	98	92	S.W.	N.	7	20	F.	R.	.14
W..16	30.10	62	71	52	97	65	81	N.E.	S.W	10	10	O.	C.	.05
T..17	30.10	56	62	50	89	91	E.	E.	9	6	O.	O.	.01
F..18	29.83	50	53	46	96	96	96	N.E.	E.	5	14	R.	R.	.40
S...19	29.60	46	48	45	96	91	94	N.E.	N.E.	10	18	R.	O.	1.55

☞

* O, cloudy; C, clear; F., fair; G., fog; H. hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☞ Means for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MAY 19, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Diphtheria and croup.	Measles.
New York	3,654,574	1469	537	21.91	21.91	1.33	3.78	1.61
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	—	—	—	—	—	—	—
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	245	71	—	12.30	2.46	.82	2.46
Baltimore	506,389	192	53	18.20	13.00	5.20	1.54	.52
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	132	41	22.80	12.16	4.56	1.52	4.56
Pittsburg	305,000	106	27	16.92	15.98	—	—	2.82
Washington	277,000	80	21	21.25	21.25	1.25	—	2.50
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	37	9	13.50	16.20	—	—	—
Nashville	87,754	33	10	21 21	12.12	—	3.03	—
Charleston	65,165	47	24	48.99	6.39	—	2.13	—
Worcester	111,732	32	11	21.9	6.26	3.13	6.26	—
Fall River	103,142	43	14	11.65	12 98	—	2.33	—
Cambridge	92,820	29	8	17.25	20.70	—	—	—
Lowell	90,114	—	—	—	—	—	—	—
New Bedford	70,511	24	11	24.96	20.80	—	8.32	—
Lynn	68,218	25	14	20.00	24.00	—	—	—
Somerville	64,894	15	5	6.66	33.33	—	—	—
Lawrence	59,072	18	6	38.88	16.66	11.11	5.55	—
Springfield	58,266	—	—	—	—	—	—	—
Holyoke	44,510	9	—	—	22.22	—	—	—
Brockton	38,759	8	—	—	—	—	—	—
Salem	37,723	5	—	—	—	—	—	—
Malden	36,421	9	—	22.22	22.22	—	11.11	—
Chelsea	34,235	12	1	16.66	—	—	—	—
Haverhill	32,651	15	7	20.00	13 33	—	6.66	—
Gloucester	31,426	5	2	60.00	20.00	—	20.00	20.00
Fitchburg	30,523	12	3	16.66	16.66	—	—	8.33
Newton	30,461	8	3	—	25.00	—	—	—
Taunton	28,527	6	3	16.66	—	—	16.66	—
Everett	28,102	—	—	—	—	—	—	—
Quincy	24,578	—	—	—	—	—	—	—
Pittsfield	23,421	—	—	—	—	—	—	—
Waltham	22,791	—	—	—	—	—	—	—
North Adams	21,883	7	4	—	—	—	—	—
Chicopee	18,316	5	2	—	—	—	—	—
Medford	17,190	2	—	—	—	—	—	—
Newburyport	15,636	2	—	—	—	—	—	—
Melrose	14,721	3	—	33.33	33.33	—	—	—

Deaths reported 2,652; under five years of age 892; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 583, acute lung diseases 458, consumption 302, diphtheria and croup 82, diarrheal diseases 53, measles 40, scarlet fever 29, whooping-cough 27, typhoid fever 21, erysipelas 17, cerebrospinal meningitis 12.

From scarlet fever New York 16, Boston 8, Worcester 2, Pittsburg, Providence, and Fitchburg 1 each. From whooping-cough New York 14, Baltimore and Washington 3 each, Boston, Pittsburg, Worcester, Fall River, Cambridge and North Adams 1 each. From typhoid fever Pittsburg 6, Boston 5, Washington 2, Cambridge, Somerville and Newton 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending May 5th, the death-rate was 19.6. Deaths reported 4,362: acute diseases of the respiratory organs (London) 417, measles 167, whooping-cough 126, diphtheria 58, scarlet fever 32, diarrheal diseases 28, fever 18.

The death-rates ranged from 13.3 in Gateshead to 28.1 in Blackburn: Bradford 17.7, Bristol 21.8, Croydon 14.7, Huddersfield 17.0, Hull 14.0, Leeds 22.5, Liverpool 23.2, London 19.0, Manchester 27.2, Nottingham 17.6, Salford 19.8, Sheffield 21.4, Swansea 16.3, West Ham 14.4.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending May 12th, the death-rate was 17.8. Deaths reported 3,968; acute diseases of the respiratory organs (London) 300, measles 166, whooping-cough 116, diphtheria 61, diarrhea 40, scarlet fever 28, fever 28, small-pox (London and Liverpool 1 each) 2.

The death-rates ranged from 11.5 in Cardiff to 29.1 in Plymouth: Birkenhead 11.6, Bradford 17.3, Brighton 18.5, Derby 18.3, Gateshead 17.6, Huddersfield 19.5, Leeds 17.9, Liverpool 23 9, London 16.4, Manchester 21.7, Newcastle-on-Tyne 17.6, Nottingham 16.8, Sheffield 19.5, Sunderland 19.8, West Ham 12.8.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MAY 19, 1900.

T. C. WALTON, medical director, detached from duty at the Naval Laboratory, Brooklyn, N. Y., and from other duty May 20th, and ordered home to await orders and retirement May 31st, at sixty-two years of age.

W. C. BRAISTED, passed assistant surgeon, orders to the "Mayflower" revoked. When the "Detroit" is placed out of commission detached and ordered home and directed to hold himself in readiness for orders to sea.

G. T. SMITH, passed assistant surgeon, detached from the Naval Laboratory and Department of Instruction, Brooklyn, N. Y., June 14th and ordered to the "Mayflower," June 15th.

G. D. COSTIGAN, passed assistant surgeon, detached from the Boston Navy Yard, May 29th and ordered to temporary duty on the "Pensacola" and then to the Asiatic Station via the "Gaelic."

E. DAVIS, assistant surgeon, detached from the Naval Hospital, Brooklyn, N. Y., May 29th, and ordered to temporary duty on the "Pensacola" and then to the Asiatic Station via the "Gaelic."

J. T. KENNEDY, assistant surgeon, detached from the "Independence," June 4th, and ordered to the Asiatic Station via the "Gaelic."

T. M. LIPPETT, assistant surgeon, detached from the "Oregon" and ordered to the "Newark."

S. W. DOUGLAS, pharmacist, detached from the "Wabash" and ordered to the Key West Naval Station for such duty as may be assigned as relief of Pharmacist I. N. HURD.

I. N. HURD, pharmacist, upon reporting of relief, detached from the Key West Naval Station and ordered to the "Wabash."

SOCIETY NOTICES.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. — The forty-ninth annual meeting of the Association will be held at Columbia University, New York City, June 23 to 30, 1900.

AMERICAN ACADEMY OF MEDICINE. — The twenty-fifth annual meeting of the Academy will be held at "The Shelburne," Atlantic City, N. J., on Saturday, June 2 and Monday, June 4, 1900.

RECENT DEATHS.

LUTHER BLODGETT MORSE, M.D., M.M.S.S., died in Watertown, May 26, 1900, aged seventy-nine years.

GARDNER CARPENTER PIERCE, M.D., M.M.S.S., of Ashland, died May 18, 1900, aged sixty-two years.

CHARLES SMITH COLLINS, M.D., of New York, a graduate of the College of Physicians and Surgeons in 1884, died from the effects of an overdose of chloral on May 20th.

JOHN MACDONALD, of New York, surgeon of the Red Star Line Steamship *Waesland*, died from pneumonia in St. Agnes' Hospital, Philadelphia, on May 21st.

BOOKS AND PAMPHLETS RECEIVED.

A Practical Treatise on Sexual Disorders of the Male and Female. By Robert W. Taylor, A.M., M.D. Second edition, thoroughly revised, with 91 illustrations and 13 plates in color and monochrome. New York and Philadelphia: Lea Brothers & Co. 1900.

Addresses.

CHAIRMAN'S ADDRESS BEFORE THE SECTION ON PRACTICE OF MEDICINE.[1]

BY GEORGE DOCK, M.D., ANN ARBOR, MICH.

We meet again for the consideration of a well-filled programme. The number of papers is considerably less than last year, but it is still so large that, allowing for the usual proportion of authors unavoidably prevented from appearing, our time must be economically used in order to get through. An effort has been made to group papers on allied topics so that the discussion may be directed to the series, and repetition avoided in that way. In most cases the topics for the groups were arranged by the officers of the Section. Other set discussions on chosen topics were projected, but for various reasons could not be carried out as planned. The officers of the Section take not a little pride in the large number of abstracts and synopses published in the programme. The utility of these in preparing members of the Section for the best appreciation of papers, in bringing out pertinent comments and criticisms, seems obvious. For the benefit of future programmes, attention may be called to the advantage of making the abstracts as short as possible. This can be done better by the author than the Section officers or the editor. It would seem that about one hundred words should be the limit.

The number of papers on our programme leads to the question whether it is not advisable to form a new section in order to take up part of the work, and interest will naturally be directed to the unofficial Section on Pathology, the existence of which you already know. There are a number of thoughts in this connection that may be expressed. In general it seems better to have as few sections as possible in an association made up, as this one is, largely of general practitioners. Yet such is the amount of material that specialization is certain to press its claims in various directions. So far as the proposed section is concerned, there is a doubt in the minds of some as to the scope intended, due to the various meanings given to the term pathology, and also to the activity of the section officers. If we take away from the existing sections on special pathology and therapeutics all their papers devoted to pathological topics, and place these in a group by themselves, we emasculate the former. Perhaps there is no greater need, not only in medicine, but also in surgery, gynecology and various other branches, than the constant repetition of the principles of pathology, the assertion of the anatomic, physiologic and chemic bases of diseases and the cultivation of positive standpoints in these branches. For the specialist in pathology such a section might doubtless be a source of much interest, but even he might gain something by annual contact with the clinical workers in hospital and general practice that he would not find in a special section.

On the other hand, a section devoted to experimental pathology might be useful, still more to a section in which general pathologic problems might be considered and where, in addition, specimens might be exhibited, methods demonstrated, and apparatus shown. So far as the exhibition of anatomic specimens is concerned, it seems to the speaker that these should be selected with special reference to their importance in pathology or to method of preparation or preservation. With energetic section officers, such as were wisely selected for this year, the results would be of great value. It might also be useful to limit the source of such specimens each year to the section of country in which the meeting is held. In this way not only would the labor, expense and risk of distant transportation be avoided, but a general cultivation of anatomic work excited, and combined with a practical exhibition of apparatus, a more rapid diffusion of methods of all kinds set up.

The chairman of a section in the year completing a century should be pardoned if he falls into the mood natural to such an epoch. At the end of this century, nothing could be more agreeable than to recount the great discoveries that have made it, in medicine, more interesting than any that have gone before. But all these things have been told and retold by more eloquent tongues, and there is another operation that is often more useful though not so pleasant — the examination of the past with a view to facing the future with more certain glance. Socrates held that an unexamined life was not worth living. The same thought might be applied to a profession, and although I would not give the impression that, like Socrates, I have a divine command to examine medicine, the chair in which your favor has placed me may be held responsible for any seeming impiety on my part for attempting it.

Not long ago, in talking with a master of one of its most successful technical subdivisions, my friend remarked that medicine was becoming daily more easy. Against the word "easy" I had to protest, though realizing what was meant. So far from growing easier, the art as well as the science of medicine grows daily more difficult. It is more certain, more thorough, more far-seeing and more far-reaching than ever before, but it requires of its votaries more knowledge, more technical dexterity, greater expenditure of time and greater lucidity of judgment than ever before. We have only to point to any one of the commonest diseases to make this clear. Take a case of typhoid or malarial fever, or of pulmonary tuberculosis, and consider the numerous things to be done and to be thought about that twenty years ago were as far from our minds as was Aristotle's treatise on the constitution of Athens.

It is an interesting and to some a discouraging fact that, although medicine has made most remarkable improvements in this century, its influence over the layman seems less than before and waning rapidly. While it is becoming more positive, more candid, more accurate, the grossest delusions flourish. Not only the plausible nostrum maker, but the palmist, the astrologer and the ridiculous therapeutic claims of a dozen half-crazed brains have their believers by the thousand. Not many years ago a favorite theme of semi-scientific poets was the prediction of a rapidly approaching golden age, when the physician, trained in biologic laws, should occupy the place once held by priests and augurs, but wield his authority only for good ends. Failure in the consummation of this ideal need not make us despair of human nature. In a time of rapid advance it must happen that great differences exist between the trained and the untrained. Moreover, this is an age with little respect for authority. Not only now as before "*irrt der Mensch so*

[1] Delivered at the Meeting of the American Medical Association, Atlantic City, N. J., June 5, 1900.

lang er strebt," but it is perhaps well for medicine that people no longer look on its real proficients with the faith of the savage in his medicine-man. Healthy skepticism can do us no harm, and we must remember that with all our advances we still have about us some relics of medievalism. The subject, however, is rather one for the psychologist than the physician, and at this time may be passed over for the consideration of one that affects us more directly, and we may venture to raise the question whether we have used to the best advantage the talents given us by this century, and whether we are likely to be prepared as well as possible for the revelation of the next. A few examples may be considered.

In the first decade of our century Corvisart gave to the world again what the preceding century had rejected. His translation of Auenbrugger's invention of percussion, enriched by his own brilliant commentaries, was soon enlarged and controlled by master minds in every country. Far half a century this has been a method of undisputed value in the determination of the existence and extent of a large number of important diseases.

In the second decade Laennec opened up a new world with the stethoscope. This has been explored by all the great physicians of the last seventy-five years, in the face of argument and ridicule, and with percussion has helped to call attention to the value of inspection and other so-called physical methods of diagnosis, but how often do we see them all entirely neglected or carelessly used! Not only is the routine examination of the body frequently left undone, but even with marked symptoms on the part of the various organs accessible by these methods, either no examination is made or it is made in a manner that would be ludicrous if the results were not often most serious. A striking example of neglect of physical examination recently came to my notice. One of my assistants found that a man who consulted him had a complete transposition of the viscera. The manipulations excited the patient's interest, and when he was told the state of affairs, said he had been examined seven times for life insurance and been treated once for pleurisy in a large city hospital, without having the condition discovered.

In the third decade Bright showed the relation of albuminuria to kidney disease, and in the fifth, Henle and others made clear the diagnostic importance of tube casts. Though the actual value of these two discoveries has often been exaggerated, they are still essential in diagnosis, but how often are they neglected! Perhaps few fail to make use of tests for albumin in cases in which certain diseases are suspected, yet, as a routine measure, they are often omitted. As to casts and also other substances in the urine, such as blood, pus and pathogenic bacteria, many physicians are as if these things had never been.

It is not difficult to explain the reasons for this state of affairs. One is indolence, but the most important is that the methods have not been acquired at the medical school; perhaps some of them have not even been seen by the helpless student. Even if the methods have been learned, the student often has not the fundamental knowledge that diagnosis means more than the naming of a disease. Satisfied if he recognizes, even vaguely, one clinical picture in a sick man, he fails to retain or acquire a mastery of diagnostic measures. The condition depends in turn partly on the absurdly large number of medical schools in the country. With from six to seven score of these the obtaining of students must be a more important matter than their training. One of the most certain hopes of the new century is that, comparatively early, many of the superfluous schools will become extinct. Along with concentration of labor in the schools and improvement in the previous preparation of students, we can confidently expect a notable change for the better in methods of teaching, for there has probably never been a time when teachers of medicine, as well as undergraduate students, were so critical in regard to methods as now.

Another topic worthy of examination is that relating to the more instrumental part of diagnosis — a thing that has within a short time assumed important proportions, but the various relations of which are often neglected. It is here especially that apparent ease tempts to superficial examination of the sick.

The many manipulations included under the general head of laboratory examinations vary so much in difficulty, in certainty and in weight as evidence that it is only natural mistakes occur, yet these mistakes are so vital that those concerned should be constantly on the alert to guard against them. How difficult to measure the importance of each laboratory fact in itself is often illustrated in practice. Thus I have known of a surgeon being told that in a certain case an enlarged spleen was part of a leukemic process. With the remark that he believed "clinical observation more trustworthy than instrumental diagnosis," he proceeded to open the abdomen. Another time the report on a sputum examination for tubercle bacilli is negative; but now, instead of relying on the clinical examination, too often sufficient, the patient is allowed to go on as if the negative examination had the same value in one case as a positive one in another. How often is it forgotten that laboratory methods must be learned as separately as any other specialty. No one would think that ability to feel alterations in the pelvic organs gives facility in the interpretation of ophthlamoscopic pictures, yet how often is it taken for granted that one who can cultivate tubercle bacilli can, without practice, detect malarial parasites, or that one who can see tube casts can also be infallible in the microscopic distinction of primary and secondary anemias.

No doubt, the unprepared but ambitious laboratory expert is partly responsible for the present state of affairs, but it would seem that the physician who calls on such an expert should select him with as much thought as he would an operating specialist. Often, too, the physician could control the work of the expert either by asking for the proof, or an explanation of the steps followed. Some time ago a bottle of specimens came to me, after making the rounds of half a dozen microscopists. All the previous examiners asserted the specimens were animal parasites, and their appearance to the naked eye — small, black, threadlike bodies as they were — made this seem probable. A glance was enough to show that in fact they were the well-known vegetable spirals, the cause of error to so many microscopists in the last fifty years. Some comparisons made it practically certain the tissue came from bananas. Yet this discovery, so easy to control, was ignored by those in charge. By a curious coincidence, the patient herself came under my observation many months later, and on hearing my state-

ment about the specimen, admitted an excessive consumption of bananas, the cause of so much trouble.

When the position and limitations of the laboratory workers are more clearly understood, his remuneration will be better regulated than now. In many places he will be part of a hospital staff, in a laboratory equipped for all kinds of work. In others, he will have his private laboratory, and in still others, where the field is not so large, he will have the less brilliant, but not less useful and perhaps more interesting, position of assistant to a busy practitioner of broad views. Into the details of the subject it is not my intention to go.

An examination of the status of another great division of our art, that of therapeutics, is also well worth while in the last days of the century. In materia medica this century, especially in the latter part, has been prodigal if not discerning. The extraordinary activity in the production of new drugs, though it may give us some that far outrank poppy and mandragora, also makes more difficult the judgment so essential to rational practice. So confused are our standards that it is often impossible to distinguish the wares of the professor of chemistry or pharmacology from those of the modern seekers after the philosopher's stone. In addition to the products of synthetic chemistry we have a new field in the long unused animal kingdom. Here constant examination is necessary. It is not easy for the busy man to see how the so-called lymph of an alleged goat should not be as potent as thyroid extract. Serum, too, is a word that suggests potentialities of many kinds, though so widely applied that Virchow's jocular definition, "Serum is any fluid that is not precisely urine," seems peculiarly apt. One hopes that the end is near when discoverers are driven to such names as "hydrogogin" and "anusol," but the possibilities of the prefix "eu" temper the hope considerably.

No doubt the commercialism of the day is partly responsible for the present state of this branch of medicine, but the medical profession has a heavy load of guilt. I am credibly informed that in a large factory of preparations used only by the profession thirty clerks are kept busy answering letters from doctors in regard to the treatment of particular cases in practice. These clerks make no pretense to knowledge of medicine or even of drugs. They have their trade catalogues, from which they readily secure the desired information. But will this tendency stop with therapeutic problems? Will not diagnostic and pathologic questions also be given the manufacturing pharmacist for solution, and will he be so blind to his own interest as to remain silent? We can gather some idea of this in some recent literature on the important subject of vaccination, a subject strangely neglected in medical schools and scientific laboratories. In this we learn of "*vaccinia sine eruptione*" as a satisfactory explanation of what would strike a critical observer as a complete failure of the virus. No wonder that "a boy living in the infected district" who performs the operation is put forth as a witness concerning a matter on which Jenner himself might not be competent to judge.

Therapeutic false prophets will last long into the twentieth century, but the examined, criticised life then, as ever since the days of Hippocrates, will be but little influenced by them. To it "they come like water and like wind they go."

THE ENDOWMENT OF MEDICAL COLLEGES.[1]

BY W. W. KEEN, M.D., LL.D.,
President of the American Medical Association.

ENDOWMENT OF MEDICAL SCHOOLS.

TURNING, now, from the affairs of the Association, I wish to say a few words in reference to a subject of paramount importance which I am sure will appeal to the sympathies of all present; namely, the need for endowments for medical schools.

The tide of charity in the United States has reached a remarkable height. The *Chicago Tribune* publishes an annual list showing that in 1894 the charitable gifts and bequests in the United States amounted in round numbers to $20,000,000; in 1895, to $29,000,000; in 1896, to $34,000,000; in 1897, to $34,000,000; in 1898, to $24,000,000; and in 1899, to the enormous sum of nearly $80,000,000.

But a small portion of this charity, however, has been bestowed upon medical schools. It is mostly to colleges, theological schools, hospitals, museums and libraries that the principal amount has been given. The cause for this, I think, has been chiefly the vicious method in which all our medical schools were formerly conducted. They were practically joint-stock companies organized for the benefit of the faculties. As Professor Bowditch has said, one might as well expect the public to endow a cotton-mill as to endow such a school. The day of these private enterprises is now, happily, nearly past. The respectable schools of medicine are now conducted by trustees, a body of men wholly apart from the faculties, who manage the affairs of the medical school just as they would those of a university, taking control of the income and expenditures of the school, placing the professors and other teachers upon salaries and conducting the affairs of the institution on broad lines of educational progress. Partly as a result of this change, chiefly through the medical faculties, and largely, I am glad to say, as a result of the influence of the profession exerted through this Association, the courses of study at the medical schools of to-day, and, therefore, the necessities of the student are so wholly different from those of twenty-five years ago, that it may be well termed a new era in medical education. As a consequence of the broadening and lengthening of the medical course of study, the cost of medical education has enormously increased. The public at large do not at all appreciate this changed condition and even you, members of the profession itself who may have graduated many years since, scarcely appreciate to its full value the difference. As a consequence, the fees of the students, which can scarcely be raised beyond the present amount, are wholly inadequate for providing a proper medical education, and the medical school appeals, as does the college and the theological school and the technical school, for wise and liberal endowments in order to provide this suitable education. "There is no branch of education," says President Eliot of Harvard, "which more needs endowment. Medical education is very expensive, because it has become, in the main, individual instruction. Large lectures and crowded clinics are seen to be of really very limited application, so that year by year the medical teaching becomes more and more costly."

[1] Abstract of the President's Address before the American Medical Association in Atlantic City, N. J., June 5, 1900.

What were the necessities of a medical school twenty-five years ago? Two lecture-rooms, in which seven professors talked, a dissecting-room, and, if possible, a clinic, which was occasionally but rarely in a college hospital. Practically the instruction which the student obtained, with the exception of dissecting, was limited to "book-knowledge" and "ear-knowledge." The student was not brought into contact with any patients or any concrete facts, observations or experiments. He only listened to what his teachers said about them. Millions were given to hospitals in which the sick were treated, but only sixpences to medical schools, in which the men who are to care for their future patients were trained. "Spain," says Lyman Abbott, "in the late war had nineteenth-century guns and sixteenth-century men behind them. We know what came." Our splendidly equipped hospitals are the nineteenth-century guns. Insufficiently trained doctors are the sixteenth-century men. The time has eminently come when the "men behind the guns" must equal in efficiency the weapons with which they do the fighting.

To perform a tracheotomy and rescue a child suffering from diphtheria is a dramatic occurrence which appeals to every one. To conduct a long series of experiments in the laboratory by means of which the cause of diphtheria shall be found and the necessity for a tracheotomy avoided appeals only to the educated few; yet the service done by the operation is a service only to the one patient who may be rescued by the knife, while the other is a service to hundreds and thousands of patients for all time who will escape both the knife and the disease. Yet, such a series of experiments in preventive medicine brings no reward in money, a limited reward in fame, and only its largest reward in the consciousness of giving a great boon to humanity, for which it never can pay.

The era of the man who simply listened to what his teachers had to tell him and then went on his way, as a "rule of thumb" man, is happily past. This is the era of the trained man and the trained woman, and training means opportunity provided by the community, and time, labor and money given by the man.

Let us look for a moment at what a medical school now needs. It stands for two things: First, "thing-knowledge," instead of "book-knowledge" and "ear-knowledge," teaching the facts of modern science by scientific methods; that is to say, methods of precision. But secondly, no medical school should be content simply with imparting the knowledge that exists. It should push back the boundaries of ignorance and by research add to existing knowledge.

In the accomplishment of the first duty of the medical school, there are required, first, didactic lectures. I am not one of those who believe that the day of the didactic lecture is past. "Never," said President Faunce, of Brown University, in his notable inaugural, "never shall we be able to do without the personality of the teacher flaming with enthusiasm for knowledge, pressing up the heights himself and helping the student on."

In the 156 medical schools in this country there are, perhaps, over 1,500 members in their faculties. In all of them are inspiring teachers flaming with enthusiasm, for a not inconsiderable proportion may properly be so described, and the influence of such enthusiastic teachers is felt by the entire class. One or two such men in every school make a good faculty. Beside the didactic lectures, a good working library and a reading or study room is a requisite. And it is a matter of no little encouragement that in the reports of the Commissioner of Education for 1898, 72 medical schools reported 151,433 volumes in their libraries.

Secondly. — The great difference between the modern method of teaching medicine and the older method consists in *laboratory instruction* and *clinical instruction*, both of which must be *individual*. Laboratories are very costly. They require buildings, equipment and assistants. The number of laboratories required in the present day in a fully equipped medical school is astonishing. First, the dissecting-room, the anatomical laboratory, and along with this a laboratory of histology, and another which may be combined with it, a laboratory of embryology. Next, a physiological laboratory, in which each student will not become an accomplished physiologist, but will become familiar with physiological methods and be trained in exact and careful observation; a laboratory of chemistry and, combined with it, especially a laboratory of physiological chemistry; in the department of materia medica, a laboratory of pharmacy, in which the student will not become a good pharmacist, but will learn the essentials of pharmacy, so that he will not make, at least, gross mistakes, which otherwise would constantly occur. Still more important is a laboratory of pharmacology in which he will learn the action of drugs and be prepared rightly to use them. In obstetrics, a laboratory of practical obstetrics and obstetrical operations is essential. In surgery, he needs a laboratory in which he shall be taught all the ordinary surgical operations. In pathology, he needs a laboratory of morbid anatomy, a laboratory of bacteriology and a laboratory of hygiene. The mere statement of this catalogue of thirteen laboratories will enforce the fact that an enormous expense not only for the installation, but also for the running expenses will be required. To show what one university abroad does, Professor Welch has stated[1] that the Prussian Government expends outside of the salaries of professors in the University of Berlin alone over $50,000 annually! What American medical school can show anything approaching an endowment which will provide such a sum?

And what has not the laboratory done for us within the last few years? It has discovered the cause of tuberculosis, tetanus, suppuration, cholera, diphtheria, bubonic plague, typhoid fever, erysipelas, pneumonia, glanders and a host of other diseases; it has shown us how to avoid all danger from trichina, so that our entire commerce in hog-products is conditioned upon the laboratory; it has shown us how to banish suppuration, erysipelas, tetanus and pyemia from our hospitals and reduce our death-rates after operations from 50 per cent. or 33 per cent., to 10 per cent., five per cent., one per cent., and often even fractions of one per cent.; it has given us a really scientific hygiene in which we no longer guess but know; it has shown us the rôle of the mosquito in malaria, of the rat in bubonic plague, of the fly in typhoid fever; it has given us the power to say to diphtheria, "Thus far shalt thou go and no farther"; it will give us the power to utter a pæan of victory over typhoid, cholera, bubonic plague, tuberculosis, yellow fever, cancer, and other such implacable enemies of the human race;

[1] Higher Medical Education and the Need for its Endowment, Medical News, July 21, 1894.

— and yet there are those who would stay this God-given hand of help!

And the laboratory has had not only its devotees but its heroes. Listen to the story of but one. Dr. Franz Müller, of Vienna, was one of those who in his investigations of the bubonic plague in 1897 contracted the dreaded disease from the bacilli in his culture tubes. When he became certain that he was infected he immediately locked himself in an isolated room and posted a message on the window pane, reading thus:

"I am suffering from plague. Please do not send a doctor to me, as, in any event, my end will come in four or five days."

A number of his associates were anxious to attend him, but he refused to admit them and died alone, within the time he predicted. He wrote a farewell letter to his parents, placed it against the window, so it could be copied from the outside, and then burned the original with his own hands, fearful lest it might be preserved and carry the mysterious germ. Can you find me a finer example of self-sacrificing altruism? Was ever a Victoria Cross more bravely won?

But the establishment of laboratories with their attendant expenses is not the only improvement in our medical curriculum. Every well-conducted medical school requires a large hospital in connection with it. Here must be installed again a fourteenth laboratory of clinical medicine, in which all the excretions of the body will be examined, tumors studied, cultures and blood counts made, or else the patients in the hospital, from the modern point of view, are neglected. It is not too much to say that a patient requiring such examinations, be he the poorest of the poor, has his case more scientifically studied, more exactly measured, more precisely treated than most rich patients in sumptuous homes.

Again, the individual instruction to which President Eliot referred is now carried out in all our best medical school hospitals by the establishment of small ward classes, by whom or before whom the patients are examined, prescribed for and operated upon by a professor or instructor, each student bearing a part; and so, by having his investigations directed, his powers of observation cultivated, his mistakes pointed out, his merits applauded, the student graduates from the medical school equipped as none of us, alas, ever had the opportunity for. All of these laboratory and ward classes imply an enormous increase in the number of assistants, young men striving not only to perfect themselves, but by teaching, to forge to the front so that the best men will win in the struggle for preferment.

Again, the course of study has been prolonged from two years, as it was until twenty or twenty-five years ago, to four years, and in addition the terms have also been lengthened. When I was a student the course of study consisted of two sessions of about nineteen weeks each, or thirty-eight weeks in all. Now the course consists, as a rule, of four sessions of thirty-two weeks each, or a total of one hundred and twenty-eight weeks, an increase of ninety weeks, nearly three and one-half times as much as twenty-five years ago. In 1885, 103 schools had courses of two years, and five schools courses of three years. In 1800, two schools had courses of two years, 10 of three years, and 141 of four years. (Monographs on Education in the United States, No. 10, Professional Education, James Russell Parsons, Jr., Department of Education for the United States Commission to the Paris Exposition of 1900, page 11).

It can be easily seen that from this additional time required another source of expense has arisen in addition to the increased number of assistants. The time given to teaching by members of the faculty, as a rule, has been more than tripled, as compared with twenty-five years ago. In addition to this, professors in charge of laboratories must practically give their whole time to the work, and are precluded, therefore, from any income from practice. These men must receive salaries sufficient for them to live upon.

Surely this statement of the difference between the education given twenty-five years ago, which required but little expenditure of money and resulted in considerable incomes, and the modern methods of education in the laboratory and the hospital, as well as the lecture-room, which require enormous expenses, is an ample reason for large endowments.

But the function of the medical school, as I have said, should not be limited merely to the imparting of existing knowledge. No school is worthy of the name that does not provide for greater or less research work, by which substantial additions to our knowledge may be made and the facilities and the results of the healing art made more efficient for the welfare of mankind. Twenty-five years ago there were practically few young men who were fitted for research work, especially laboratory work. Now every well-equipped school has attached to it one way or another a score or more of young men who are eager for work, longing for the opportunity for usefulness and distinction if they can only obtain a bare living. When in my own school I look around me and see these young men thirsting for opportunities for usefulness and distinction, I am often heartsick at our want of facilities for this purpose, and I long with an intense longing for some wise and munificent friend of humanity who will endow post-graduate scholarships, fellowships and laboratories for just such an end. Our hospitals do a magnificent work in charity, helping the sick and the forlorn, the weak and the suffering in a way which appeals to the charitable instincts of our fellow countrymen, and to this appeal they have responded most generously. ***But I venture to say that the medical school which trained a Lister, a Pasteur, a Koch, has done more for humanity than all the hospitals of this country combined.*** The modest laboratory at Würtzburg consisted chiefly of a Rhumkorff coil, and a Crooke's tube — and Röntgen. Other Röntgens and Listers we have among us if we but knew it. These are the men who are the world's real illustrious heroes.

It is especially in these days that in America we need such researches, for our tropical possessions have brought us face to face with new problems which we can only justly meet by the most careful investigations. It is to our credit that several of our medical colleges have already established schools of tropical medicine, which show that the profession, as well as the public, are rising to the level of our responsibilities and duties.

It is also a cheerful sign of the times that at Harvard a School of Comparative Medicine has been established, which will lead to other similar schools in connection with our medical colleges for the broad study of disease both in man and in the lower animals. All such knowledge should be correlated, and we may well learn from the diseases of animals how to care

for man, as thus far we have learned chiefly from the diseases of man how to care for animals. The endowment of this school with the modest sum of $100,000 is an omen of future good. So, too, the somewhat similar school at Buffalo bids fair to add immensely to our knowledge and therefore to our ability to heal.

What now has the American public done for the medical school? Let us contrast it with the endowments in theology. Our academic institutions have such an enormous sum total of endowments that I do not even consider these. Let us, however, compare theology and medicine, remembering that theology is almost wholly a literary study, dealing not with the facts of nature, requiring no laboratories and no large corps of assistants and therefore conducted at a minimum of cost. In 1898 (United States Education Report) 84 theological schools reported endowments of $18,000,000, and 71 schools do not report this item; 19 out of 151 medical schools report endowments of $1,906,072. Five theological schools have endowments of from $850,000 to $1,369,000 each. Yet in 1899 there were only 8,000 students of theology for whom this enormous endowment was provided as against 24,000 students of medicine. Each theological student had the income of an endowment of $2,250 provided for his aid, each medical student the income from $83. As against 171 endowed chairs of theology, there are only five in medicine.

I do not grudge a dollar to the theologian, but I plead for his medical brother, that, with a vastly more expensive education, he shall have a reasonable provision made for his training. I have already indicated to some extent the direction which these endowments of medical schools should take. They may be classed in three categories:

(1) The endowment of professorships. By doing this the salary of the professor would be made available for the other wants of the school. The endowment may well take the form of a memorial, either of the generous donor, or, still better, of some distinguished former occupant of such a chair whose name would always add luster to it.

(2) The endowment of the laboratories, which, as I have indicated, are so costly, both in their installation and in their yearly expenses.

(3) The endowment of post-graduate scholarships and research fellowships, these being intended especially for those who will devote their time to original research. Students cannot take much time for original research; their regular studies will absorb all their energies. Research must be done chiefly by young graduates under the direction of stimulating and energetic members of the faculty.

It is not, I trust, too much to hope, if not now, that in the near future the American Medical Association will set a fruitful example by giving each year "scientific grants in aid of research." The first object of the Association must be, necessarily, to place itself on a strong financial basis. It should own its own building, its printing and publishing plant, and, as soon as possible, should have a reserve fund of considerable proportions. Nothing conduces to the stability and conservativeness of any institution like a good bank balance. The British Medical Association has to-day an excess of assets over liabilities of nearly $380,000, chiefly invested in its building at 429 Strand, London. The American Medical Association has made a fair start with a surplus of over $27,000 last January, and, with its large and, let us hope, rapidly increasing membership, it will before long assume a rank second only to the British Medical Association. Last year [2] the Scientific Grants Committee allotted £741, or somewhat more than $3,500, for research work, distributed to three research scholarships, the holders of which were paid $750 each a year, and 33 grants in aid of research work, varying in amounts from $25 to $100. Among those to whom grants were made occur the well-known names of Beevor, Vaughan Harley, Kanthack, Luff, Manson, Noel Payton and Risien Russell. I should hope that the American Medical Association might even now begin by a modest appropriation, say of $500 a year, which should be allotted by the trustees, or by a special committee on scientific grants, after a careful investigation of the merits and the character of the person to whom such grants were made. No grant should exceed $100, or possibly even, at first, $50 in amount. The results of such grants would be not only absolute additions to our knowledge, but the cultivation of a scientific spirit which would permeate the whole profession and elevate its objects and aims.

In pleading for these endowments of medical schools, it is but a plea for a return to the profession of a tithe of what they have given. Two years ago I carefully investigated the value of the services rendered to the poor in the city of Philadelphia by the medical staff of the Jefferson Medical College Hospital alone, and I found that 129 medical men were then attached to the hospital, and their services, calculated on a very moderate basis of the ordinary fees, I valued at over $500,000. To a profession which gives so freely of that which is most difficult to give, its own life-blood, surely the public for its own protection may give reasonable endowments to its medical schools. It will be returned to the community tenfold in better educated, better trained and more successful doctors. More devoted, self-sacrificing men and women they never can have.

GASTRIC HEMORRHAGE.[1]

BY W. L. RODMAN, M.D., PHILADELPHIA,
Professor of Principles of Surgery and Clinical Surgery, Medico-Chirurgical College.

PERMIT me in the first place to express my profoundest gratitude to the Association for the distinguished honor conferred in placing the surgical oration for 1900 in my hands. It is with more than diffidence that I approach so great a responsibility, being keenly alive to my own shortcomings, and having for the nonce a quickened memory of the brilliant addresses made upon former occasions by many of my illustrious predecessors.

Instead of reviewing the advances made in the entire field of surgery during the past year — a task which could, at best, be only cursorily done in the time that I feel warranted in occupying — I have chosen to consider the subject of hemorrhage from the stomach in its several phases as being more likely to interest a mixed audience, such as we have, com-

[1] Address in Surgery before the American Medical Association, Atlantic City, N. J., June 5-8, 1900.

[2] British Medical Journal, 1899, ii, p. 219.

prising specialists, general practitioners and surgeons. Furthermore, the lack of attention given the subject justifies the selection.

Gastric hemorrhage of whatever nature was, until recently, looked upon as strictly a medical affection, and was treated upon the same general principles underlying the treatment of many other internal hemorrhages. This is still true of many — indeed most — cases of gastrorrhagia, but, as we shall endeavor to show, is not the case with others which are treated by a combination of medical and surgical means, and others still which should be met by prompt operative procedure.

Our purpose will be best subserved by enumerating the different varieties of gastrorrhagias, showing how they are to be diagnosticated, and giving the treatment to be pursued in the more important varieties.

Hemorrhage from the stomach may result from ulcer of the stomach, duodenal ulcer, gastric carcinoma, cirrhosis of the liver, vicarious menstruation, post-operative hematemesis, purpura hemorrhagica, miliary aneurisms, aneurisms of the aorta and other vessels, leukemia, typhoid, yellow, and other infectious fevers, valvular disease of the heart, and various kinds of traumatism.

It will only be practicable to consider the most important and frequent causes of gastric hemorrhage.

Gastric ulcer is the most common disease of the stomach producing hemorrhage — occurring in five per cent. of the entire population, according to Ewald [2] and others high in authority.

Hematemesis occurs in at least 50 per cent. of all cases of gastric ulcer, and many authorities estimate it as present in 80 per cent. It is, too, fatal in eight per cent. of the cases in which it occurs, according to the conservative estimate of Leube,[3] and we cannot question that it is indirectly fatal in a much greater number of cases by anemia and its remote consequences.

Many authorities who may be quoted place both the frequency and mortality of hemorrhage higher than Leube does, and very few as low. Therefore, its prompt detection and proper treatment are of the greatest importance. The recognition of gastric hemorrhage resulting from ulcer is usually readily made on account of the previous diagnosis in the case; but if the patient is seen at or subsequent to the hemorrhage for the first time its association with the other classical symptoms of ulcer, particularly pain and vomiting after eating, leave little room for doubt. While there will be pain, vomiting and gastrorrhagia in carcinoma of the stomach, the differences furnished by the two diseases are so marked that doubtful or border-line cases will be rare.

Pain, which is common to both, is more influenced by the taking of food in ulcer, and the local tenderness upon pressure is decidedly more circumscribed, so much so that the patient will point at it with the tip of his finger, rather than with the entire hand. This is a valuable sign, and is insisted upon by J. M. Da Costa.[4] It is usually felt with the greatest intensity from one to two inches below the xiphoid cartilage, and directly opposite, near the heads of the two last ribs, will be found a second painful spot. The pain of ulcer is often relieved at once by emesis if it empties the stomach. This is not the case with the pain and vomiting of carcinoma.

The character and amount of the ejected blood, however, will usually give prompt and positive evidence of its source and the cause underlying it, making it needless to question and physically examine a patient who should be kept quiet during, and for some time after, a hemorrhage. Bleeding in carcinoma is rarely so free as in ulcer; the amount of blood lost being more frequent, in small quantities, and of the characteristic coffee-grounds appearance. It does not resemble pure blood as it does in ulcer, even though mixed with food. The presence of hydrochloric acid — perhaps an excess of it, or hyperchlorhydria — in the ejected matter is as characteristic of ulcer as its absence and the presence of lactic acid are of carcinoma. Ulcer is more frequent in females under forty, whereas carcinoma occurs more commonly in men past middle life.

If an examination of the case is allowable, the presence of a palpable tumor will be more often encountered in carcinoma than in benign ulcer, but I would emphasize the fact that a decided tumor may and did exist in quite a number of the forty benign ulcers thus far excised. On account of the tumor all of the operators thought that they were operating for malignant disease, until the microscope showed differently, and in every instance the subsequent clinical history has confirmed the verdict of the microscopist. Our distinguished President, Dr. Keen,[5] was one of the first to do partial gastrectomy for a benign ulcer which caused quite a marked tumor through the abdominal wall. The patient recovered promptly and is still — ten years after the operation — in perfect health. Others have had the same experience, as will be seen by reference to my paper read before the American Surgical Association, May 1st, reporting all operated cases up to date.

Treatment. — Formerly the treatment of hemorrhage from gastric ulcer was uniformly by ice, astringents and opium, combined, of course, with rest. This should properly be the treatment still for the first hemorrhage in all cases; for the second, possibly; but not for subsequent ones, for recurring hemorrhage, like appendicitis, will sooner or later prove fatal, and should, like that affection, be treated radically; and to carry the parallelism further, the best time to operate is between attacks. With two hemorrhages coming close together we may assume that, as in appendicitis, there will be a third attack, and if anything is to be attempted surgically it should be done when the patient is in fairly good condition, and not in the collapse of hemorrhage.

Before taking up operative procedures it might be well to refer to the treatment of gastrorrhagia by copious enemata of hot water, as advised and practised with such happy effect seemingly by Tripier.[6]

In several cases which had resisted all the usual medicinal and dietetic treatment, Tripier secured prompt and abiding results by hot enemata repeated twice and thrice daily. The water should be injected at a temperature of 112° F. to 120° F. There can be no doubt, he says, that the hemorrhage came from the stomach, duodenum, and points high up in the alimentary tract. Hot water acts reflexly.

Tripier has also found that hot enemata promptly

[2] Ewald: Diseases of Stomach.
[3] Archives f. klin. Chir., 1897.
[4] Da Costa: Medical Diagnosis.
[5] Cartwright Lectures, p. 82.
[6] Semaine Médicale, Paris, 1898, vol. xviii, pp. 241-245.

check intestinal hemorrhage in typhoid fever, as it will bleeding from the rectum, sigmoid and large bowel. We use hot water to check external, uterine and other hemorrhages; and so superior is it to ice that one rarely sees the latter used. It certainly should be preferred in rectal and other intestinal hemorrhages where the water can come promptly in contact with the bleeding points. We also know that, with the patient in proper position, points higher up in the alimentary canal may thus be reached, and the bleeding capillaries or arterioles influenced directly by the best of hemostatics — heat. There is also evidence to show that it acts reflexly, and may in this way control duodenal, even gastric hemorrhage. Plunging the hands in hot water will at times quickly arrest bleeding at the nose, as will ice applied to the head. This surely must be reflex. Another and good reason for using hot water per rectum in the manner advised by Tripier is, that if nothing more is done, shock is combated in the best possible way, as it is easy to add salt to the water in proper proportion to make normal salt solution. Hot water should also be taken in small quantities by the stomach. It is my belief that it will be both less likely to excite vomiting and more certain in its hemostatic effects than ice.

Favorably as I look upon the proposal to use hot water in the ways indicated in both gastric and intestinal hemorrhage, anatomy and pathology must not be forgotten, and it should be clearly understood that hot water can do no more in internal hemorrhages than is to be expected in external ones. If the bleeding is capillary or the open arterioles of very small size, prompt hemostasis may result; whereas if an artery or vein of any size has been opened, we may expect much less from any treatment which depends for its success upon the formation of a firm clot in the mouth of the bleeding vessel than we usually can in external hemorrhage. In the latter we usually have complete section of a blood-vessel which favors retraction and contraction of its coats — nature's best means of arresting hemorrhage, favoring as they do the formation of a clot.

In hemorrhage the result of disease, however, we have very generally a lateral opening made into the calibre of the blood-vessel, and the ability of the latter to contract and retract within its sheath is no greater, but actually less, than that of a vessel incompletely cut across. Occasionally, it is true, ulcerative action will as completely divide a blood-vessel as if it were done by a knife, but such cases are exceptional, as will be shown by a careful study of 55 fatal cases of gastric and duodenal hemorrhage collected and reported by M. Savariaud[7] in his very complete thesis.

Of 55 autopsies collected from various sources, and reported by Savariaud (none were operated upon), there were:

Ulcerations of the splenic artery	17 cases.
" " coronary artery	6 "
" " pancreaticoduodenal artery	7 "
" " gastric arterioles	10 "
Branches of the coronary vein	2 "
Other veins	2 "
Vessel not determined	2 "
No vascular orifice visible	4 "
Vessel not mentioned	4 "

Hematemesis frequently occurs as the result of duodenal ulcerations, and as it is at times impossible to differentiate between gastric and duodenal hemorrhage, we have included the seven cases of duodenal ulcer. Furthermore, gastric and duodenal ulcerations frequently coexist and the treatment of both is essentially the same.

The splenic artery and vein have been opened by the same ulcer as occurred in the case of Gaillard.[8]

Contrary to what might with reason be expected, there is no constant relation between the size of the vessel and the amount of or rapidity with which the blood is lost. It is impossible, therefore, to diagnosticate with any degree of certainty the source of the hemorrhage, and an opinion at best is only a guess based upon probabilities anatomic and pathologic. He who said "the end of all philosophy is a learned doubt" must have been a medical man thinking of gastric hemorrhage.

The subjoined table is also from Savariaud:

Vessel.	No. of cases.	Sudden death.	Rapid death.	Survived considerable time.
Heart	4	1	1	2 (3 days).
Aorta	2	1	1	1 (10 days).
Hepatic	2	1	1	1 (10 days).
Splenic	17	3	7	7 (2 to 8 days).
Coronary	6	1	3	2
Pancreaticoduodenal	6	1	3	2 (8 to 15 days).
Arterioles	10	1	1	8 (4 to 15 days).
Small veins	4	1	1	2 (7 to 11 days).
Invisible veins	3	2	1	1 (21 days).

It will also be seen from this table, based upon autopsies where careful examinations are made, that death may be sudden in capillary hemorrhage, or delayed ten days when there is an opening as large as a haricot bean into the aorta (Grunfeld's case). This uncertainty of diagnosis is a strong argument in favor of surgical intervention before it is too late to be of use.

I would emphasize the fact shown by the above table, which is based upon accurate post-mortem examinations, that large and rapidly fatal hemorrhages may occur from capillaries. These observations have also been borne out in many of the operative cases herewith reported, for in at least seven, while the bleeding was free, it could not be located. So then, having in mind the usual source of hemorrhage in gastric ulcer, and that it is from vessels of rather large size in nearly four-fifths of all fatal cases, the uncertainty and utter unreliability of the ordinary medical means employed will be apparent.

Measures adapted to the treatment of capillary hemorrhage may often succeed, and of these we believe hot water to promise the most; but as one would not think of treating hemorrhage from the radial artery or vein by such means, one should think less of doing so here with vessels of equal and even greater size involved, with nature's best means of checking hemorrhage made impossible for the reasons already given.

It is therefore manifest that hemorrhages following the superficial erosions of the gastric mucous membrane — the "exulceratio simplex" of Dieulafoy — rather than the gastrorrhagias following the "ulcus simplex" of Cruveilhier, which is essentially a perforating process, stand the best chance to be arrested spontaneously by nature, or to be cured by the routine medicinal and dietetic treatment.

The hemorrhage may undoubtedly be just as free in the superficial as the deep ulcers, but the difference is in the size of the bleeding vessels. As there are only

[7] Thèse de Paris, 1898.

[8] Savariaud's Thesis.

capillaries and arterioles in the gastric mucous membrane, hemorrhage from such vessels could be reasonably expected to yield to measures impotent in the presence of bleeding from a coronary or splenic artery. Representing, as they do, less than 20 per cent. of the fatal hemorrhages, there is every reason to believe that bleeding from capillaries and arterioles will constitute a very much larger per cent., possibly a majority of non-fatal gastrorrhagias. I have collected, so far as I know, every published case of operation for bleeding ulcer, and to them added many reported to me in personal communications for the first time. A careful study of my tables does not enable me to say definitely the number of cases in which the bleeding came from arterioles. It does, however, justify the statement that it is a large per cent.

Having exhausted all of the ordinary medical means for arresting hemorrhage, should such cases be treated as external hemorrhage, namely, the bleeding vessels cut down upon and ligated?

There are now a sufficient number of cases upon record to justify the statement that better results will be secured by judicious interference than by a policy of inaction hitherto invariably followed. By this I would not be understood as advocating the opposite plan of interference in every case — far from it.

Up to a certain point there is substantial agreement between physicians and surgeons, and I may say here that the idea of arresting hemorrhage from gastric ulcer by surgical means occurred to a physician and surgeon at the same time.

In all cases of small but frequent hemorrhages, which slowly but almost surely destroy the patient, recourse should be had to timely operation. If there is at the same time gastrectasis, the indication for operation is absolute, as dilatation stretches the ulcer, prevents healing and favors bleeding. The results, too, of operations for chronic hemorrhage have been more than encouraging, and should, without question, lead to earlier and more frequent surgical intervention.

There have been 31 operations for frequently recurring, or what might be called chronic hemorrhages, with six deaths, or a mortality of 19.3 per cent. This is, under the circumstances, an excellent showing when it is remembered that it represents but little more than the average mortality given in a large number of operations upon the stomach for non-hemorrhagic ulcers.

Mr. Robson[9] reports 188 operations for gastric ulcer (non-hemorrhagic and non-perforating) with a mortality of 16.4 per cent., which is about the same conclusion reached by Heydenreich,[10] Tricomi[11] and others who have written upon the subject. He later on gives the mortality of operations for chronic hemorrhage as 10.5 per cent. Manifestly gastro-enterostomy, pyloroplasty, or other operations upon the stomach should not give a better prognosis on account of the presence of hemorrhage as a symptom. The good showing now made for recurring hemorrhage will be still better when physicians generally recognize that if delayed operations are justifiable, early ones are better, and should, therefore, be encouraged at a time when the chances of success are correspondingly brighter.

Operations for acute hemorrhage in general do not so imperatively call for surgical intervention, but when this is said, it is saying nothing more than is true of external hemorrhage. In our present state of knowledge, we cannot say that operation should ever be done during the first hemorrhage or the ensuing shock. Likewise, if seen after the hemorrhage, when the patient is successfully rallying from shock, a policy of non-intervention is not only permissible, but best.

Dieulafoy[12] advises surgical intervention after the first hemorrhage if as much as half a litre of blood is lost, and insists upon operation if the bleeding is repeated within twenty-four hours. One of Dieulafoy's cases was successfully operated upon by Cazin after the first hemorrhage. There has been, however, a rather general condemnation of too early operation by surgeons, from Mikulicz, the first to operate for hemorrhage, in 1887, to Keen, Hartman, Heydenreich and Robson, none of whom have advised operations in acute hemorrhage. Certainly surgeons cannot be accused of too great alacrity in operating for gastric hemorrhage when none have been so radical as a physician.

If the hemorrhage is repeated within a short time the burning question will present itself to the physician first, to the surgeon next — shall a policy of "masterly inactivity" be longer pursued? To this question a majority would still answer "yes," believing that the chances offered by nature are better than those given by surgery. I am satisfied that during a second serious hemorrhage inaction should govern, or that only medical means be used; but as soon as bleeding ceases, the patient has rallied from shock and is in good condition, something should be done to prevent what are reasonably certain — other hemorrhages. This is even less radical than what we should do in external hemorrhage, and, as has been said, nature has less chance to arrest spontaneously bleeding from vessels opened by ulcerative action. I am thoroughly convinced from a careful study of all reported operative cases up to date that none were operated too early, but many too late.

It is certainly the duty of the physician to summon surgical aid as soon as the second hemorrhage begins if he has not already done so, that everything may be in readiness to seize upon a propitious time for interference before a third attack. It is easy to believe that several cases in my tables were lost by delaying operation until after the third and fourth hemorrhage. *Per contra*, there have been quite a number of successful operations after the second and third hemorrhage, operation having been done in a condition of extreme anemia in all of them, as the cases of Roux, Robson, Cazin, Andrews, and two of Armstrong's cases.

There have been 32 operations for acute hemorrhage, with 13 deaths, or 40.6 per cent. mortality; a much better showing than was made by Mr. Robson, who reported a smaller number of cases, and included also among them cases of vicarious menstruation and post-operative hematemesis, neither of which has any direct etiologic or other connection with gastric ulcer.

It will be seen from a glance at the tables[13] herewith appended, that many operative procedures have been

[9] Hunterian Lectures, Lancet, March 10, 1900, p. 678.
[10] Semaine Médicale, Paris, 1898, vol. xviii, p. 49.
[11] Riforma Medica, Palermo, 1899, xv, pages 326, 330, 350.
[12] Presse Médicale, 1898, p. 31.
[13] Tables omitted.

carried out in the treatment of gastrorrhagia, and to those sufficiently interested to study them, the symptoms, condition found at operation, method of operation and result of each case are given.

I wish here to give full credit to my assistants, Drs. W. Hersey Thomas and Stillwell C. Burns, for most valuable assistance rendered in the collection of data and preparation of tables.

It will not be my purpose here to review the merits of all of the many operative procedures that have been undertaken for the arrest of gastric hemorrhage. This would interest surgeons chiefly and they will find all information desired in the tables herewith presented, or in an analysis of them by the author in a paper read before the American Surgical Association on May 1st last. Of the dozen methods practised the three best are pylorectomy, or partial gastrectomy, according to site of ulcer, gastro-enterostomy, and ligature *en masse* of the gastric mucosa. The first is ideal surgery, preventing possible perforation and malignant degeneration; the second is practical and is oftentimes the best surgery, stopping hemorrhage and favoring cicatrization of the ulcer by putting the stomach at rest; while the third is frequently the most desirable way to end an exploratory gastrotomy when the site of the bleeding vessel is unknown until the stomach is opened. Each method has given good results, but for many reasons the second has been preferred in a majority of instances, and of the many ways of performing gastro-enterostomy the posterior or von Hacker's method with the Murphy button has been and should be generally chosen.

Carcinoma. — While hemorrhage *per se* as a symptom of gastric carcinoma has not, so far as I know, led to an operation, there can be no doubt that in certain cases it will be either so free or of such frequent recurrence as to make one desirable. Resection, if practicable, is best, but gastro-enterostomy would not only arrest the bleeding, but usually delay the inevitable end, and bring about a decided amelioration of all the distressing symptoms. Indicated as it often is in advanced carcinoma without hemorrhage, the presence of the latter as a symptom should be an additional reason for surgical intervention.

Cirrhosis. — Hemorrhage into the stomach is a frequent symptom in cirrhosis of the liver, and death resulting therefrom cannot be considered as rare. Preble,[14] of Chicago, has recently reported 60 cases of fatal hemorrhage, three in his own practice, one in that of a colleague, and 56 collected from literature. The diagnosis in all was verified by autopsy. After a careful analysis of these cases, a full history of each being given, he draws some interesting and striking conclusions:

(1) Fatal gastro-intestinal hemorrhage is an infrequent but not rare complication of cirrhosis of the liver.

(2) In a great majority of the cases the cirrhosis is atrophic, but it may be hypertrophic.

(3) In one-third of the cases the first hemorrhage is fatal; in the other two-thirds the hemorrhages continue at intervals of over a period varying from a few months to several years, the maximum given being eleven years.

(4) In one-third of the cases the diagnosis can be made at or before the time of the first hemorrhage. In the other cases the diagnosis cannot be made at all or only after a few months or years, during which time other symptoms of cirrhosis have developed.

(5) Esophageal varices are present in 80 per cent. of the cases, and in more than one-half of the 80 per cent. the varices show macroscopical ruptures, and it is probable that many other ruptures would be found if the varices were tested by injection of air or fluid.

(6) Fatal hemorrhages occur in cases which show no esophageal varices, and they are probably due to the simultaneous rupture of many capillaries of the gastro-intestinal mucous membrane.

(7) The hemorrhages in this class of cases are usually preceded by other symptoms of cirrhosis, but the first symptom may be a fatal hemorrhage.

(8) In six per cent. of the cases which show esophageal varices was the cirrhosis typical, that is, showed ascites, enlarged spleen and subcutaneous abdominal varices.

It is certainly interesting to learn that the diagnosis of cirrhosis can be made in only one-third of the cases at the time of the first hemorrhage. A study of Preble's cases, along with those collected by Savariaud, impress[15] one with the possibility of an unexpected and fatal gastric hemorrhage in the course of either a latent gastric ulcer or cirrhosis.

I am also impressed with the belief that several of the cases reported as having been operated upon for diffused or capillary hemorrhage complicating ulcer were really instances of venous hemorrhage into the stomach on account of an obstructed portal circulation due to cirrhosis. Such cases do not and cannot give as good operative results as in ulcer.

Treatment. — It has been suggested that as esophageal varices are the cause of a large per cent. of the gastorrhagias complicating cirrhosis, pressure should be made upon the ruptured varix or varices by introducing a rubber bag into the esophagus and distending it with water or air. This suggestion, so far as I know, has not been carried out. The objections that one can urge against it are manifold:

(1) It is questionable if pressure can be sufficiently protracted in this way to be of benefit.

(2) In only six per cent. of the cases showing esophageal varices was the cirrhosis typical, and therefore easily diagnosticated. It is certainly unsafe to formulate a treatment which at best has only a chance to reach a comparatively small number of cases.

(3) The esophageal veins are part of the systemic, while those returning blood from the gastric mucous membrane are of the portal circulation. Therefore it would seem *a priori* that dilatation of the esophageal veins could not occur until there was primarily marked dilatation of the venules of the gastric mucosa, and secondarily enlargement of the connecting veins between the two systems.

(4) Hemorrhage from the stomach may result from so many causes that nothing in the way of surgery short of gastrotomy, which discloses the source of the hemorrhage, or gastro-enterostomy, which, by draining the stomach and placing it at rest, may stop the bleeding, would seem to be indicated.

There can be no reasonable doubt, however, that operations for gastric hemorrhage in cirrhosis have a less promising future than the same procedures in bleeding ulcer; for in the former there is, in addition, that general hemorrhagic tendency that makes bleeding from any situation most difficult to arrest.

[14] American Journal of Medical Sciences, March, 1900, p. 263.

[15] Thèse de Paris.

We have all realized this, and know how hard it is to permanently control the epistaxis of a cirrhotic patient. Still, while mindful of the difficulties in the way of success, I believe that with limitations surgical intervention may properly be considered. No operation has as yet, so far as I know, been deliberately performed where the diagnosis of cirrhosis has been made. Several of the cases reported and operated as hemorrhagic ulcers may have been — probably were — instances of cirrhosis.

A study of Preble's cases makes it sufficiently clear that in many instances it is simply impossible to diagnosticate between the hematemeses of ulcer and cirrhosis. One of them, Case XXXVI, a young woman in her usual health, suddenly vomits a large amount of blood. A diagnosis of ulcus ventriculi was made without reservation. At autopsy it was found to be a marked case of cirrhosis, and no evidence whatsoever of ulcer could be discovered. The opposite error can as easily be made, as evidenced by Preble's report of two cases seen at the Cook County Hospital with Drs. Walker and Ochsner. "Both were men between forty and fifty years, hard drinkers for many years. Both vomited a large amount of blood while at their usual work and in their usual health. Neither had any gastric disturbances other than could be referred to the chronic alcoholism. In both the physical examination was negative. There was no change in the hepatic dulness, no splenic tumor, no ascites, no superficial varices, no localized or diffused epigastric tenderness. The hematemesis continued over a few days to death. Were they cases of gastric ulcer or obscured cirrhosis of the liver? The general condition of the patients was so good as almost to exclude any thought of carcinoma. The age, sex and lack of gastric symptoms spoke against ulcer. The negative physical examination spoke against cirrhosis. Fatal hemorrhage from either cause is rare. The post-mortem examination showed that both were cases of gastric ulcer, and the eroded vessel could be seen on the base of the ulcer. There was no suggestion of any change in the liver."

Vicarious menstruation.— There has been a more or less general sentiment, if not positive conviction, on the part of a majority of the profession, that vicarious menstruation may manifest itself in the way of hematemesis. Such was, too, until recently, the general teaching, and there are not wanting those who still believe in the possibility of such an occurrence. If it does happen one would naturally think that it should do so in young women whose ovaries and tubes have been removed, or in women submitted to hysterectomy, the appendages being left, and who cannot therefore menstruate in the natural way. I have written to fifty prominent gynecologists and surgeons to learn if they had seen, and if so how frequently, instances of vicarious menstruation showing itself by hematemesis following removal of the appendages, uterus, or both.

Nearly all have answered, and it is a significant fact that only two have reported (each a single case) affirmatively. Yet these operations are very common, one of them having been for many years probably the most frequently practised surgical procedure. Many of the writers have expressed a positive conviction that vicarious menstruation does not occur,

It would seem, therefore, that what has hitherto been a vague impression with most of us is not corroborated by a careful examination of a large number of cases where it should if it ever occurs.

Post-operative hematemesis. — I cannot find in any of the text-books on surgery at my command reference to post-operative hematemesis. It must, therefore, be rare.

Mayo Robson,[16] in his Hunterian Lectures, states that he has encountered it in seven cases of his own, two being fatal, and refers to a similar experience of Eiselberg, who reported to the Surgical Society in Berlin the details of six cases. It is significant that nearly all of the cases reported by Robson and Eiselberg were instances of operations upon the intestines, omentum and structures adjacent to the stomach. The anesthetic could not have been responsible for the vomiting of blood, for in one of Mr. Robson's cases cocaine was used, and a cholecystotomy for carcinoma of the bile-ducts completed in fifteen minutes. In several other cases there was no vomiting after the operation. Robson states that in six of the cases the omentum was ligated, and in another it was probably contused. He also says that "in an experiment on an animal multiple hemorrhages into the stomach followed twisting of the omentum."

Mr. Robson has also kindly given me, in a letter, details of a case of stab-wound of the abdomen. He says: "I explored the abdomen for a stab-wound, and as the patient was vomiting blood, I expected to find a wound of the stomach, but discovered no perforation of the stomach walls, though I had to ligate the superior mesenteric vein, the patient making a satisfactory recovery. The hemorrhage was doubtless due to bruising of the mucous membrane without rupture of the peritoneal coat." The explanation given of the hematemesis in this patient is satisfactory and rational, and could not well have resulted in any other way. I do not, however, understand why operations upon the omentum should cause post-operative hematemesis, as I can see no anatomical explanation for it. At first it would seem theoretically that twisting the omentum might force into the venules of the mucous membrane an amount of blood which they could not accommodate, and some weak vessel give way, causing hemorrhage into the stomach, notwithstanding the great capacity of veins to undergo enormous dilatation without rupture.

I have, with the assistance of Drs. Burns and Woody, experimented upon four dogs, endeavoring to, if possible, cause hemorrhage into the stomach by rapid and severe traumatism not applied to the stomach itself. In the first experiment a large dog was chloroformed, the omentum twisted into a rope, ligated high up and then resected. The stomach was at once cut into, and there was no suggestion of even hypermia from cardia to pylorus. The stomach was then removed, tacked upon a board, and photographed at once by Dr. Kassabian, who was present for that purpose. In experiment No. 2 a medium-sized young dog was chloroformed, the omentum twisted rapidly into a rope, and ligated high up. In addition I squeezed the spleen and pancreas so forcibly that I ruptured the former to a slight extent, hoping by the compression to force enough blood from these organs, whose blood supply is so intimately connected with that of the stomach, into the gastric mucosa to cause rupture of some of its vessels. The stomach was immediately opened and found to be perfectly normal

[16] Lancet, March 10, 1900, p. 679.

in every respect, quite as much so as in case No. 1. In experiment No. 3 the dog was chloroformed, the omentum twisted into a rope, and the small intestines were compressed and squeezed for more than would or could be done in any operative procedure, Dr. Burns at the same time compressing the liver so as to interfere with the portal circulation. The stomach was then rapidly opened and found perfectly normal. The dogs were not allowed to come from under the anesthetic, and in all the stomach was quite empty, food having been withheld for some hours. In experiment No. 4 a medium-sized dog (female) was chloroformed, the omentum twisted into a rope, ligated high up and resected. The wound was then closed with ordinary aseptic precautions, and the animal made a rapid and painless recovery. There was no vomiting of blood or blood in the feces at any time during the three weeks that the dog was kept under close observation in the laboratory. It ate well soon after coming from under the chloroform, and never had a bad symptom.

Of the fifty surgeons written to only nine have seen post-operative hematemesis. Three operators, Johnston, of Richmond, Parrish, of Philadelphia, and Wathen, of Louisville, have each had one case of gastrorrhagia following hysterectomy. All occurred within a week after operation, one being fatal. Clarke and Noble, of Philadelphia, have each seen fatal hemorrhage from duodenal ulcers after operation. The former does not give the exact nature of the operation, but it was intrapelvic. Noble states that his patient was a woman, about sixty, operated on for ventral hernia. Hemorrhage that was quickly fatal occurred on the tenth day after operation. Autopsy showed a marked duodenal ulceration. Noble and Wathen have each had a fatal case of hemorrhage after nephrorraphy. Noble operated upon both kidneys in a young woman. Death occurred on the twelfth day as a result of hemorrhage from the stomach and bowels. No autopsy was allowed. Wathen's patient was a highly neurotic young woman. She began vomiting blood more than a week after operation, and died two or three days later. No autopsy. Johnston has also reported cases of hematemesis following operations for ovarian tumor with a twisted pedicle, suppurating ovarian cyst, strangulated hernia, and extra-uterine pregnancy. The first three were fatal and accompanied with general peritonitis; the last recovered. Three others have seen post-operative hematemesis, but it followed operations upon the stomach itself; these were apparently cases of secondary hemorrhage and are, therefore, excluded.

I have been particular to make inquiries as to the frequency of hematemesis after hernia operations, as Robson and Eiselberg have both seen it. Of the fifty surgeons written to only two have encountered it and one of the cases was a strangulated hernia with general peritonitis. The other was the case operated for ventral hernia, and who died from a demonstrated duodenal ulcer. In more than 100 herniotomies — strangulated and non-strangulated cases —I have never encountered it. It is possible to quote from only a few of the many surgeons communicated with.

W. T. Bull, of New York, writes: "I have never seen hematemesis after any operation. I fancy I have had 650 herniotomies."

W. B. de Garmo, of New York, writes: "I have never seen in any of my own cases one of hematemesis following operation. In replying to your second question I would say, I have done 653 herniotomies; of these 573 have been by the Bassini method for the cure of inguinal hernia."

W. B. Coley, of New York, says: "I have never seen a case of post-operative hematemesis. I cannot tell in how many cases I have removed omentum, but in a large number. You could say that in over 700 cases of hernia operations I have never seen it."

J. M. T. Finney, of Baltimore, writes: "In my own personal experience, I cannot recall an instance of post-operative hematemesis following hernia, or any other operation in which the omentum was involved, nor have I known of any taking place in the Hopkins Hospital."

The sum total of all the hernia operations done by the fifty surgeons to whom I have written must be many thousands, and yet but two cases of post-operative hematemesis are reported, and each has been satisfactorily explained, one dying of general peritonitis, following strangulated hernia, the other from a duodenal ulcer demonstrated at autopsy. All of the cases seen by Robson and Eiselberg followed intra-abdominal operations, such being also the case with all post-operative hematemeses reported by American surgeons, excepting two cases, where nephrorraphy had been done. In doing nephrorraphy, the peritoneum may, in the first place, be incautiously opened by the most careful operator, and secondly, there is always a considerable amount of traumatism necessary to force the kidney into the lumbar incision. It is not, therefore, difficult to understand how a hematoma may easily be produced by the great abdominal pressure oftentimes necessary to bring the kidney into view, and how, furthermore, this extravasation may occasionally cause sapremia, septicemia, or peritonitis, according to circumstances. All septic conditions favor disintegration of the blood corpuscles, and predispose to hemorrhage from mucous surfaces. The gastric mucosa is particularly liable to congestion in conditions of sepsis, both on account of the marked tendency of the thin and more or less disintegrated blood to settle in the internal organs, and the vomiting and retching so frequently present. We have, I think, in this a satisfactory explanation of the rare hematemeses following abdominal operations, and have shown that even violent traumatism to the omentum, intestines, spleen, pancreas and liver did not produce immediate hemorrhage into the stomach in any of the dogs experimented upon, and it does not seem unreasonable to suppose that delayed hematemesis will usually depend upon disintegration of the blood due to sepsis.

Original Articles.

CLINICAL REPORT OF CASES OF INFECTION DUE TO THE BACILLUS AËROGENES CAPSULATUS OF WELCH.

BY PAUL THORNDIKE, M.D.,
Assistant Surgeon, Boston City Hospital.

With Pathological Reports by MR. PRESTON KYES, of the Johns Hopkins Medical School; DR. H. C. LOW, Assistant in Pathology, Boston City Hospital, and DR. F. T. FULTON, Pathological House Officer, Boston City Hospital.

EVERY surgeon is familiar with the severer forms of septic infection which take possession of the individual, completely conquer his powers of resistance

and reach a fatal termination in a few hours or days. Some of these infections in which edema of the infected tissues and the formation of gas in them prior to death have been noticeably prominent have presented clinical pictures definite enough in character to merit special description. Such cases have been described by various writers under the titles of "phlegmonous gangrene," "malignant edema," "gangrenous emphysema," and "emphysematous gangrene," the confusion of names being due to the fact that the organisms which caused these infections had been imperfectly isolated and identified. Then came Koch's discovery of the so-called "bacillus edematis maligni" and its gas producing capacity. This organism was considered to be the cause of all emphysemas due to infection, and the term "malignant edema" was thus made a general term embracing all cases of this virulent infection associated with emphysema. Later it was realized that all such emphysematous infections were not due to this bacillus, so that the term "malignant edema" was restricted and came to be used only for those cases in which this bacillus was demonstrated. So the matter stands at present, and the term "malignant edema" is associated with the Koch bacillus only.

Malignant edema is described by Roswell Park as follows:

The characteristic feature of the disease is the rapidity of its spread, the septic character of the inflammatory product, and the speedy formation of gas. A dirty, brownish-reddish skin, mottled with blue, whose veins are filled with stagnant blood, covers the affected areas. The underlying tissues are sodden with fluid and distended with gaseous products of decomposition, so that the finger feels a fine crepitus, as is common in subcutaneous emphysema. From the wound, if there be one, flows a thin, foul-smelling secretion, which may also be expressed from the deeper layers. That the neighboring lymph spaces, vessels and glands are actively participating in the transmission of septic products is evident from the enormous swelling which the latter present and from the general condition of the patient. The rapid elevation of temperature, with but trifling remission, remains constant until shortly before death. The tongue early becomes dry, cleaves to the palate, its surface covered with thick, foul fur. Consciousness is early lost, and patients become peculiarly apathetic, complaining only of pain and burning thirst. Sometimes they are delirious instead of apathetic. Coma, incontinence, frequent and superficial breathing, and dilatation of the pupil are the precursors of death, which may occur in from fifteen to thirty hours.

After death the cadaver bloats quickly and putrefaction goes on with singular rapidity. At the seat of the lesion muscles and tendons will be found macerated, the bone denuded, surrounded by a putrid fluid, and the entire region presenting a notable swelling and enfiltration of the soft parts, with a reddish fluid and stinking gases.

Several other organisms, however, produce gas and necrosis in the human tissues during life, and chief among these is the bacillus aërogenes capsulatus, described by Welch in 1891 and described independently by E. Fraenkel in 1893. Since that time the reports of cases by Welch, Nuttall, Fraenkel, Flexner, P. Ernst, Levy, Bloodgood and others indicate its wide distribution and its prominence in the list of gas-producing organisms.

The following is the report of two cases of infection by this organism. The cases are reported because of the rarity of reported cases where the Welch bacillus has been demonstrated before death, and because there are one or two points in connection with the surgical treatment of these cases which the writers consider important and worthy of mention.

CASE I. Man, age forty-five, carpenter, fell from a staging to the ground, a distance of ten feet, striking his arm; walked to the hospital, where it was found his injury was a compound fracture of both bones of the right forearm, two and one-half inches above the wrist. The wound was on the palmar surface directly over the seat of fracture. Operation under ether consisted of a most thorough cleaning of the seat of injury with corrosive sublimate, sterile dressing and plaster of Paris. At the end of the first day plaster was split on account of pain; there was semi-delirium, and the temperature was 102°. Second day there was much pain, cyanosis of the fingers, great swelling of the forearm. The plaster was removed, and emphysema was quite noticeable. Third day he failed markedly and the emphysema extended beyond the shoulder well on to the chest and even to the clavicle. He was seen by many surgeons in consultation; amputation was advised and rapidly performed, the arm being removed at the shoulder joint. Both flaps were emphysematous. Rallied well during the following twenty-four hours; his mind was clear, and his pulse dropped to 90 and was regular; no pain. Thirty-six hours after operation septic symptoms returned; man gradually sank and died two days after operation.

Mr. Preston Kyes, at that time a surgical dresser at the hospital, reports on the specimen as follows:

The pathological findings in the case reported above were definite in confirming the provisional clinical diagnosis of emphysematous gangrene due to the bacillus aërogenes capsulatus. They were based upon a study of the amputated limb, the internal organs, and the causal bacillus. They are here reported in that order.

The affected arm was examined immediately following its amputation. It was much swollen, the normal outlines being lost at the wrist and elbow joints, and the overlying skin everywhere tense and glistening. The color of the upper arm was little changed, but the entire forearm was of a deep plum color, and the hand and fingers a dusky red. Bullæ, varying from 5 to 25 millimetres in diameter and filled with a clear serum, were irregularly distributed over the forearm. Emphysema was extreme. Everywhere below the elbow the tissues were "cushiony" to the touch and slightest pressure produced audible crackling. This crackling was also present in the upper arm along the course of the brachial trunks.

From a puncture into the forearm there escaped much frothy serum, and on laying open the tissues there was a general outpouring of serum and gas. This exudate came from all interstices of the tissue, and there were no definite cavity formations. The cut surfaces were gelatinous, soft to the touch, and in areas semi-diffluent. There was, however, no offensive odor, and the several structures were easily differentiated. Incision into the upper arm liberated much gas from the tissue immediately surrounding the great vessels, and exposed a single focus of pus about the ulnar nerve in the course posterior to the internal condyle of the humerus. Dissection excluded thrombosis or constriction of the larger vessels, and the removal of the soft parts showed comminuted fracture of both bones of the forearm within five centimetres of their distal extremities.

Cover-slip smears and frozen sections from several areas in the forearm showed its invasion by a long bacillus with rounded ends, a capsule, and staining by Gram. The completeness of this invasion was most marked. Lymph channels and intercellular spaces were choked with masses of the organism in pure growth. This rapid multiplication, extension and gas production of the organism in living tissues was the feature of the infection, as shown in the arm. (Fig. 1.)

Of the organs obtained at autopsy the heart and kidneys were negative, both to gross and microscopic examination. The spleen was dark in color, somewhat enlarged, but of normal consistency. On microscopic examination there were seen several minute and widely separated foci of the

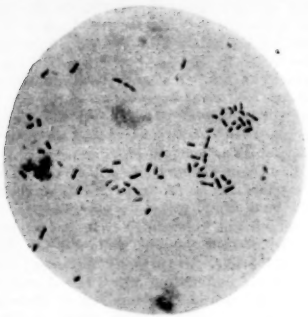


FIG. 1.

bacilli above mentioned. Surrounding each focus was a considerable zone of necrotic cells, deeply staining with eosin, and lacking demonstrable nuclei. The organ was much congested and showed a moderate grade of chronic interstitial splenitis.

The liver presented striking gross and microscopic lesions. (Fig. 2.) The entire organ was honeycombed with countless small cavities varying in diameter from .3 to two millimetres, and filled with gas and serum. These cavities were uniformly distributed throughout the liver, but showed no constant relation to a unit of liver structure. The lobules were ill-defined and the entire organ dark in color and somewhat flabby. Its cut surfaces were moist with frothy serum, and from them gas was expressed in great quantity. Microscopically the lesions were equally definite. The above-described cavities appeared in section as sharply defined circular vacuoles, lined by a ring of closely packed bacilli. The centre of many of these vacuoles was filled with a small amount of coagulated albumin containing a few bacilli, but the chief distribution of the organism was in the lining lamella above described. Surrounding each vacuole was a concentric area of necrotic tissue. The liver cells within this area were compressed, granular and stained deeply with eosin. Bacilli were seen within the capillaries separating these necrotic liver cells. Many veins both inter- and intra-lobular contained the bacilli in great numbers, the lumen often being occluded. The condition was typically that first described by Ernst [1] as "Schaumleber," and now recognized as characteristic of the action of the bacillus aërogenes capsulatus.

Previous to its mutilation, cultures were made from several areas of the affected arm. Inoculations of blood serum, litmus milk, bouillon, potato and glucose agar were incubated aërobically and anaërobically. No growth was obtained on the media exposed to oxygen, whereas those within Buchner jars were in all cases positive. On blood serum at twenty-four hours there was a diffuse moist growth, ill-defined and grayish-white in color. At forty-eight hours there was the same growth somewhat increased in amount. Litmus milk at twenty-four hours showed a decrease in the intensity of the blue, and at forty-eight hours a pink tint with a white coagulum below. At ninety-six hours the median was nearly colorless, with the much shrunken coagulum below. Bouillon at twenty-four hours showed no change, but at forty-eight hours a diffuse cloudiness. At ninety-six hours this cloudiness had cleared and there was at the bottom of the tube a fairly abundant grayish-white precipitate. On potato there was no visible growth. Cover-slips, however, showed the presence of the organism. On glucose agar slant at twenty-four hours there appeared a scant white line bordered by pin point colonies. At forty-eight hours this growth was more abundant, with the discrete marginal colonies increased in number and averaging .5 millimetre in diameter. These colonies were raised, sharply outlined, and centred with a minute brown dot. In glucose agar stab at twenty-four hours a few bubbles of gas were present. These were increased at forty-eight hours, and the medium somewhat riddled at ninety-six hours.

The clouding of bouillon, the coagulation of milk, and production of gas in glucose agar, were sufficient, together with the morphology and staining reaction of the organism, to reasonably identify it as the bacillus aërogenes capsulatus. The amount of the gas formation was not, however, so marked as usually seen with that bacillus and growth on all media was meagre, a second transplantation being unsuccessful. To recover the organism in characteristic growth and to further determine its gas production, animal experimentation as indicated by Welch and Nuttall,[2] was employed.

One-half of one cubic centimetre of the ten-day bouillon culture was inoculated into the ear vein of a rabbit, and the animal killed. The cadaver was placed at 34° C. for ten hours and then exposed to room temperature for twelve hours. At autopsy, inspection showed but slight abdominal distention. The general inflation of the cadaver usually obtained by such experimentation was lacking. Incision, however, showed a definite subcutaneous collection of gas in the right groin. Cover-slip smears from this area showed the bacillus aërogenes capsulatus in great numbers. Puncture into the peritoneal cavity liberated sufficient gas to ignite with a report but not to continue a flame. Within the peritoneal cavity was a small amount of chocolate-brown fluid containing the bacillus in pure culture. The liver was riddled with minute cavities filled with gas and serum, and from cut surfaces much frothy exudate was expressed. The stomach and intestines were normal except for slight digestion of the stomach wall. There was no putrefactive odor. The kidneys were normal in gross appearance and from their cut surfaces no gas could be expressed. Much gas was present within the pericardium, the heart cavities, the jugular, portal and renal veins, and the venæ cavæ. Cultures from the liver, kidneys, pericardium, heart's blood and peritoneal fluid gave the bacillus in

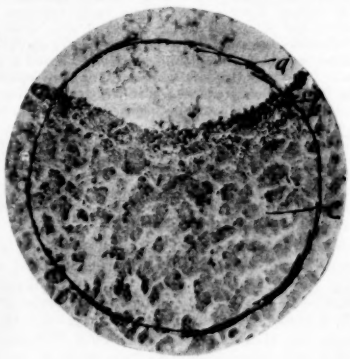


FIG. 2.

pure growth. Similar inoculation of a second rabbit duplicated these findings.

The organism as recovered by animal inoculation grew typically on all media, the gas production being marked.

[1] Virchow's Arch., cxxxiii.

[2] Welch and Nuttall: Johns Hopkins Hospital Bulletin, July-August, 1892.

Bouillon was quickly clouded and later cleared, leaving a heavy sediment at the bottom of the tube. Here, as in the other liquid media, bubbles of gas were constantly rising to the surface. Milk was acidified and coagulated. On potato there was a visible growth with gas blebs about the sides of the tube, while glucose agar was shattered by the abundant gas formed. These characteristic growths completed the identification of the bacillus.

From a bacteriological standpoint the chief interest in this case is the scarcity of the growth of the organism as first recovered on artificial media. Although obtained in abundant and pure culture from the tissues of a rapidly fatal case, the organism grew but feebly under conditions usually producing its rapid multiplication. Attempts at second transplantation failed in all media except bouillon, and in this the organism showed distinct variation in size and staining properties. In addition to the bacilli staining intensely by Gram were many unevenly stained and still others evenly but feebly stained. Inoculation of these atypical forms produced the characteristic condition in rabbits and from these animals the bacillus was recovered in typical form with its normal staining reaction. A second point of interest is the fact that no spores were produced on blood serum. The phenomenon of spore formation has been described as a cultural characteristic,[3] but repeated failures to produce it in the above cultivation lead us to agree with Fraenkel [4] in his statement that the spore formation is inconstant and determined by influences at present unknown.

From a surgical standpoint the feature of the case is the emphasis it adds to the necessity of early diagnosis and immediate treatment. The rapid multiplication and extension of the gas bacillus as shown in the tissues of the arm, its final distribution to the internal organs, and the rapidly fatal termination, indicate the necessity of early surgical interference in infections with this organism. From this and previously reported cases we are led to believe that the isolation from an emphysematous wound of a large anaërobic, gas-producing bacillus with rounded ends, a capsule, and staining by Gram, is an indication for immediate multiple incision or amputation, depending upon the location and extent of the process.

CASE II. This case was admitted to the Boston City Hospital in the service of Dr. W. P. Bolles and was operated upon by Dr. J. T. Bottomley. Through the kindness of these gentlemen I am enabled to report the case. Man, thirty-three years old, injured by the fall of a heavy truss upon his leg. A compound fracture of both bones of the right leg below the knee resulted. Shock was so extreme that operation was delayed six hours. Then ether was given, the wound thoroughly cleaned with corrosive sublimate, a sterile dressing was applied, with a posterior wire splint. At the end of the operation there was great shock, and much stimulation was necessary. On the next day there was much pain, some vomiting, no chill. On the third day toes and foot cyanotic, much pain, still no chill. Bluish, mottled spots on the leg were beginning to appear. On the fourth day leg was covered with blebs and there was a foul discharge from the wound. Emphysema of the tissues had appeared and had extended above the middle of the thigh. Amputation performed at once at the middle of the thigh through diseased tissue, and free drainage was left for the stump. The next day, the fifth after the injury, emphysema was still extending. On the seventh day emphysema had reached Poupart's ligament. Ether was given and five long incisions were made in the crepitating area. From that time the disease stopped extending, the patient made an uninterrupted recovery and was discharged in excellent condition at the end of the third week after his injury.

The pathologist's report on the amputated leg was made by Dr. H. C. Low, and is as follows:

Specimen consists of right lower extremity amputated 26 centimetres above external condyle of femur. Anterior skin flap taken four centimetres above upper border of patella, posterior flap 12 centimetres above. Sawn end of femur extends two centimetres above the circular incision of the muscle.

External wound due to injury. On posterior surface of calf of leg is an open wound 12 centimetres in length, five centimetres in breadth; lance-shaped with point downward, long diameter almost coinciding with the long axis of leg. Edges of wound are clean cut throughout, most of its border sharply defined and slightly everted. The entire wound is filled with projecting muscle tissue; that at upper end is brownish red, firm and fairly normal in appearance. In the centre of the wound it is dirty brown, soft, easily torn; can be drawn out in short small filaments, which are easily broken. At the lower end of the wound the muscle is better preserved than in the middle but not as well as that at the upper end. A thin brownish-red fluid containing oil droplets escapes from the central portion of the wound. Near the middle point is a sinus extending seven centimetres into the leg, about one centimetre in diameter at the beginning, gradually disappearing in the lacerated tissues. Walls appear to have a yellowish-red deposit on the surface. Fat tissue at edge of wound one centimetre in thickness, firm, slightly discolored, greenish yellow. The entire limb is considerably swollen. The swelling is diffuse, but most marked below the knee, especially over the dorsum of foot. Circumference of calf, 40 centimetres.

Sole of foot, ends of toes and heel are purplish in color. Dorsum of foot light blue with irregular purplish markings. The entire inner aspect of the leg below the knee shows various shades of purple extending around posteriorly and gradually fading on the external surface. Anteriorly the purple has a greenish tinge over the lower portion of the leg, while just below the knee anteriorly the skin is a light brown, presenting the appearance of having been slightly scorched. The same appearance is seen above the knee on the inner, outer, and posterior surfaces. This brownish discoloration appears superficial, while subcutaneously, irregular purplish patches are seen. Anteriorly, above the knee, the skin is normal. The discoloration reaches on the outer and to a less extent on the inner aspect to the edge of the skin flap.

On inner side of leg in region of internal malleolus, extending as high as the junction of middle and upper thirds, are a number of blebs varying in size, the smallest being pin-head size, the largest measuring four centimetres in length. They are very irregular in shape, elevated one-half millimetre; epidermis not tense, sometimes slightly wrinkled. Some are purplish red, others almost colorless. They contain a thin watery fluid corresponding in color to the color of bleb. On outer side of leg near external wound are a few blebs similar to those just described. A slight subcutaneous crepitus can be felt quite generally over surface of leg, most marked anteriorly in the middle third. The skin in general over leg and foot is dense. It pits slightly over dorsum of foot and over leg.

Muscles at site of operation appear normal in color and consistence. Underneath the skin remaining over the outer, inner and posterior aspects of thigh, corresponding to the area of discoloration described, the subcutaneous tissues are thoroughly infiltrated with blood, giving them a very dark, almost homogeneous, glistening appearance. A thin, bloody fluid containing fat droplets slowly exudes. This infiltration extends completely to the skin incision. Over the area corresponding to the popliteal space gas bubbles escape on pressure. The muscles themselves and the intermuscular tissue are not infiltrated, although along the popliteal artery the tissues are slightly edematous.

[3] Dunham, E. K.; Loc. cit., vol. viii, April, 1897.
[4] Fraenkel, E.; Münchener med. Wochenschrift, No. 43, 1899, p. 1421.

Just above and external to the wound the tissues are undermined, forming a fairly localized area, four-fifths centimetre in diameter, irregular in shape, containing a grayish-yellow mucopurulent material. Internal to the wound the subcutaneous tissues as far as the internal malleolus are infiltrated with an abundant thin, bloody fluid everywhere containing fat droplets. There are many large areas of localized blood clot. This infiltration is limited chiefly to the subcutaneous tissues and to the course of the posterior tibial vessels. Anteriorly, along the tibia over the middle third, the tissues are easily stripped off, being separated by the fluid and gas.

Popliteal artery is intact to point of bifurcation. About one centimetre below this the posterior tibial has been divided and ligated. The posterior tibial and peroneal below this are dilated, dark red and filled with blood clots. Posterior tibial vein is intact. Several smaller vessels at wound are lacerated.

The tissues within the wound are all much macerated, dirty brown, friable, so that a probe can be easily pushed in at any point. The macerated tissue is fairly well defined from the tissue closely surrounding it, which, though much firmer, is quite friable and brownish yellow, lacking the redness and toughness of normal muscle. The muscles below the wound are pale, almost yellowish, and fairly firm. The subcutaneous tissue is everywhere edematous and in places hemorrhagic. Tissues over dorsum of foot are especially edematous, having a gelatinous, transluscent appearance. No hemorrhagic areas.

The tibia, about six centimetres below the articulating surface, is badly comminuted, there being seven distinct fragments besides smaller bits of bone among the tissues. The fibula, at a corresponding point, shows a transverse, irregular fracture with no comminution. The anterior tibial artery, just after passing through the interosseous septum, contains a grayish red, rather firm plug for a distance of eight centimetres.

BACTERIOLOGICAL EXAMINATION.

The examination of the pus about the fracture showed cocci in clumps and in short chains, and great numbers of large bacilli which stain by Gram's method. With Welch's stain the capsules of these bacilli were demonstrated. In the blood of the femoral artery and the muscular tissue at the point of amputation these capsulated bacilli were also present, but not in the blebs nor the tissues of the lower half of the leg.

In cultures taken from the pus on blood serum grown aerobically at 37° C. the streptococcus pyogenes, staphylococcus pyogenes aureus and albus were isolated. There were very few of these large bacilli present in the water of the first plants. From various parts of the leg cultures were made on glucose agar, blood serum, glucose bouillon, milk and potato, and were grown at 37° C. in Buchner jars. Only those from the pus about the fracture showed a growth of this bacillus and there were many other organisms present. After three generations a culture on agar was obtained with several colonies of these bacilli. With several of these colonies a suspension was made in one cubic centimetre of bouillon, which was then inoculated in the ear vein of a rabbit. The rabbit was killed in ten minutes and placed in the thermostat at 20° C. for thirty hours. At autopsy the abdomen was found slightly distended with gas, which, escaping through a trocar, burned with a blue flame. The liver showed a few gas blebs, but the other organs were not emphysematous.

Gas bubbles were present in the blood of the larger vessels, fluid in the peritoneum and the retroperitoneal tissue. In smears from the liver and peritoneum large capsulated bacilli were found. Pure cultures of these bacilli were grown anaërobically from the heart, liver and peritoneum. In over 200 cultures the growth of this bacillus was studied and found to be almost identical with that of the bacillus capsulatus aërogenes as described by Welch and Nuttall.

These bacilli were generally about the thickness of the bacillus anthracis, but varied much in length. In shape they were irregular, being more often straight and rarely much curved. Their ends were slightly rounded, sometimes square, and they occurred singly, in pairs or not uncommonly in short chains. In some old cultures there were quite long threads and the bacilli had nearly square ends. They stained with the ordinary aniline dyes and by Gram's method, and often showed irregular unstained spots, especially with methylene blue. In cultures that had been exposed to the air several days a great number of the bacilli decolorized by Gram's method. Rarely capsulated forms occurred in cultures. The bacilli were non-motile.

In Buchner jars at 37° C. they grew readily in nearly all media, but especially well in agar, milk, potato and blood serum. They did not develop aërobically except that in deep stab cultures or those already started in Buchner jars there was a slow growth.

On agar at the end of twenty hours there were numerous slightly elevated colonies, varying from pin-point to pin-head size. These were almost colorless by direct light and white by transmitted light. After three days' growth the colonies were one to two millimetres in diameter, opaque except at the thinner edges, and often grayish white with a dark centre. Beneath the surface the colonies were oval or elliptical, generally with clear-cut edges, but often feathery.

In all glucose media gas was formed. In no case were spores demonstrated although many plants on blood serum were made. In glucose bouillon the bacillus only grew well when the media was neutral or alkaline. In all acid media the growth was poor. In glucose-free bouillon no indol was produced. Milk was soon acidified and a firm coagulum filled with gas bubbles floated on the clear fluid. On potato gas was formed in the water and a thin, moist, whitish growth appeared on the second or third day. None of the gelatine cultures were liquefied.

MICROSCOPICAL EXAMINATION.

A section from the periosteum just below the wound consists of fat and fibrous tissue. The tissue is markedly infiltrated with leucocytes, red blood corpuscles and fibrin, and with many large bacilli and numerous cocci. The cocci in some places are in clumps, in others in short chains. There is an active emigration of leucocytes through the walls of the blood-vessels.

The muscle bordering on the abscess near the external wound is very edematous. The spaces between the muscle fibres contain fibrin, a moderate number of well-preserved leucocytes and some red blood corpuscles. The fibres themselves are much degenerated, both the cross and longitudinal striations being to a great extent lost. Some individual fibres have become hyaline. The smaller vessels in places are plugged with leucocytes. The muscle just below the wound is, on the whole, very well preserved histologically. Even where the fibres are completely surrounded by myriads of bacilli the striations are perfect, though the nuclei of the fibres are lost. There is some edema but no infiltration with leucocytes where the bacilli are not associated with other organisms.

The lumen of the anterior tibial artery is filled with fibrin intimately attached to the vessel wall and containing leucocytes in its meshes. No organisms can be demonstrated within the vessel. There is some necrosis and much infiltration with leucocytes around the vessel, where the bacilli and cocci are very abundant.

Tissues from dorsum of foot show much edema but no organisms and no cellular exudate. The tissues at point of amputation show no histological changes.

Now let us compare these cases with those which occurred prior to our knowledge of the Welch bacillus.

CASE III. Boy, twelve years old, fell from a tree with a resulting compound fracture of both bones of the left forearm three inches above the wrist. Ether, thorough cleaning of the wound, sterile dressing, plaster of Paris. At the end of one day delirium in the

evening, temperature 101½°, upper arm tender and slightly discolored. At the end of the second day delirium increased, swelling and discoloration much greater. On the third day emphysema extended over the whole arm and out onto the chest. Amputation just below shoulder-joint through diseased tissue, both flaps crepitate, stump left open without stitches. Complete convalescence in one month without interruption. Pathologist reports no emboli or thrombi in the vessels of the arm.

Here, then, is another case identical in all ways except that the Welch bacillus was not known or sought for.

In the Medical and Surgical Reports of the Boston City Hospital, seventh series, 1896, Dr. Abner Post reports three similar cases in an article entitled "Pseudo-Malignant Edema." In presenting his cases he says:

The cases to which I refer were distinguished by numerous blebs, rapid swelling, and a discoloration which extended far in advance of the actual gangrene, and by the presence of gas, more or less imperfectly recognized in the tissues about the wound, and in the dark-colored fluid which flowed from it. The cases often followed injuries of slight moment which promised at first sight to do well, but which in their rapidly fatal course were really due to a poison over which the surgeon has as little control as over tetanus. Occurring infrequently, the disease has been looked upon simply as a rapid form of septicemia and has hardly gained a separate place in our nosology.

It is said to have been observed 29 times during the Crimean War by Sallaron. I have not been able to identify it among the recorded fatalities of our Civil War, though I have reason to think that it may have occurred occasionally among the cases characterized as hospital gangrene. It is not mentioned by name in the medical and surgical history of the war so far as I can find.

The cases may be summarized as follows:

Case I. Boy, fifteen years old, fell off Stony Brook bridge, sustaining a compound fracture of the right wrist. Ether, thorough scrubbing of the seat of injury with corrosive sublimate, sterile dressing, plaster of Paris. On the third day great pain, swelling, temperature 104°, plaster split. On the fourth day tenderness of the axilla, plaster removed, arm covered with blebs, patient delirious. On the fifth day discoloration over the axilla and onto the breast. At the end of five days, death without operation, the patient having refused it.

In commenting on this case, Dr. Post says:

It was something of a shock to find that in spite of the most careful antiseptic precautions one of the most unpleasant forms of septic infection had taken place. It was evident that we were face to face with something of an unusual nature. That the infection was one that in some way set at naught antiseptic precautions was, I believe, the opinion of those of the surgical staff who saw it.

Case II. Man, twenty-seven years old, cut his left arm in attempt to commit suicide. He then crawled along the dirt floor of the cellar in which he was lying and was brought to the hospital six or seven hours later, his wound having been dressed by a physician in the interval. Ether, sutures removed from the wound, thorough scrubbing with corrosive sublimate, aseptic dressing, plaster-of-Paris. One day later slight delirium, a discolored hand, some odor, dressing changed, slight discharge from the wound. Two days later delirium increased; incontinence of urine. Died in less than forty-eight hours from the time of injury.

AUTOPSY DIAGNOSIS, SEPTICEMIA.

Autopsy by Dr. Dwight eight hours after death. Body well developed and nourished. Warm. Rigor mortis present. Left arm, shoulder and left chest swollen, discolored, and large amount of emphysema extending into right clavicular region. Several large blebs on flexor surface of left arm. About two inches below bend of elbow incised wound five inches long. Edges separated by swelling from within, with protrusions from its lower end of blood clots and muscular substance. On pressure anywhere in vicinity large amount of frothy fluid can be expressed. Foul odor and discharge.

Head. — No sign of injury. Skull normal thickness. Meninges adherent to skull over both frontal and right parietal regions. Meninges injected. Brain substance rather soft, and vessels injected, otherwise normal.

Chest. — Each pleural cavity contained small amount of reddish fluid, emphysema of precordial tissues.

Lungs. — Entirely free, inflated, emphysematous, considerable amount of watery edema.

Heart. — Pericardium contains about one ounce of clear fluid. Heart muscles somewhat soft and opaque. Size normal. Valves normal. Right side of heart and both auricles contain large amount of clotted blood, with considerable emphysema.

Liver. — Normal in size, soft and somewhat injected.

Spleen. — Considerably enlarged, dark red, soft and pulpy.

Kidneys. — Normal size, considerably injected. Capsule not adherent. Adrenal glands enlarged, firm and red.

Bladder. — Contained considerable quantity of clear urine.

Mesenteric and post-peritoneal glands considerably enlarged, soft and red.

Intestines. — Large, has large amount of soft, unformed, yellow fecal matter. Small intestine, about a foot and a half above iliocecal valve, was somewhat injected, and in this region the Peyer's patches and follicles were moderately enlarged.

Aorta and great vessels normal.

Cultures were taken from urine, heart, chest walls, etc.

DIAGNOSIS.

Infected wound of arm, septicemia, acute congestion of liver and kidneys and spleen, enlargement and congestion of mesenteric and post-peritoneal glands, granular degeneration of heart, congestion and edema of lungs, chronic adhesive meningitis.

Some earth from the spot where the accident took place was obtained and was examined bacteriologically by Dr. E. W. Dwight. It contained many bacilli resembling the Koch bacillus of malignant edema, but it was not that bacillus.

In the absence of the regular pathologist, I attempted to demonstrate the organisms present in this case. Cultures from the liver, lungs, and urine were negative. Sections of muscular tissue from the edges of the wound in arm showed numerous staphylococci and large bacilli in chains of three or four elements. Cultures from wound, spleen, and heart's blood showed staphylococcus pyogenes aureus, and the above bacillus in great numbers. In cultures from the chest wall the aureus was absent, but the bacillus present resembled in appearance and biological characteristics the bacillus of malignant edema. This was not the bacillus edematis maligni, because of its failure to liquefy gelatine, and its not being strictly anaërobic. Its growth, spore, and gas formation were very rapid, and in bouillon, under hydrogen, the chains were much larger, often containing eight or ten elements. In earth from the cellar where the injury was inflicted a similar organism was demonstrated in great numbers. This would seem to be a mixed infection, in which, if the bacillus reported was not the direct

cause of death, it certainly influenced materially the progress of the infection.

These cultures were seen by Dr. F. B. Mallory, assistant pathologist at the Boston City Hospital, who confirmed Dr. Dwight's description.

In commenting upon this case Dr. Post says:

This case presented in a striking manner the characteristics of malignant edema. The autopsy seemed to confirm that diagnosis. It was a disappointment to find that the bacteriological examination failed to disclose the existence of the bacillus of malignant edema.

CASE III. Man, thirty-five years old, was thrown from a wagon, sustaining a compound fracture of both bones of the right leg. He then crawled one hundred yards in the dirt, was picked up and brought to the hospital in an ambulance. Ether, the usual careful scrubbing with corrosive sublimate, sterile dressing, plaster-of-Paris bandage. First day, patient restless and in great pain. Third day, delirium marked; thought to be alcoholic. Fourth day, plaster and dressing removed; no pus, but a slight sloughing of the edges of the wound. Nothing to account for the general condition of the patient. Sixth day, patient failing, temperature high, marked edema, leg covered with blebs and cyanotic. Patient died seventh day after injury without operation. After death a large amount of thin, frothy, non-purulent discharge with a bad odor came from the wound. No autopsy allowed. Specimens from the vicinity of the wound were examined by Dr. J. H. Wright and showed streptococci and a bacillus with rounded ends, which Dr. Wright, after careful study, decided was not the bacillus of malignant edema and that its identity was uncertain.

SKARS PATHOLOGICAL LABORATORY, HARVARD MEDICAL SCHOOL, December 6, 1894.

Report of the bacteriological examination of Dr. Post's case of peculiar cellulitis of the leg following a compound fracture, Boston City Hospital, November, 1894:

The material examined was the seropurulent exudate in the deep subcutaneous tissue not far from the wound. Direct examination with the microscope showed the presence of numerous leucocytes and numerous bacteria of two kinds, namely, streptococci, and large numbers of a rather large bacillus, with rounded ends and one or two clear, unstained areas in its protoplasm. This bacillus was apparently present in somewhat greater numbers than the streptococci. Gelatine cultures, made after the manner of Liborius for anaërobic cultivation, showed very numerous colonies throughout the medium after twenty-four hours. After forty-eight hours these colonies had increased in size, attaining a diameter of two or three millimetres. They were all alike. None of the colonies of the streptococci (which grows only feebly on gelatine) were to be made out. To the naked eye the colonies appear as hazy, cloudy, spherical spots two or three millimetres in diameter, with a faintly radiate structure and denser centre. Under the low power of the microscope the colony is seen to consist of a dense spherical centre from which radiate in all directions bizarre, contorted, elongated (sometimes corkscrew-shaped) daughter colonies. These are very small and very numerous, more numerous near the central mass, but becoming progressively fewer in number toward the periphery. These small daughter colonies constitute the hazy, faintly radiate appearance noted with the naked eye. They may be observed with the microscope in small numbers, far beyond the microscopic limits of the colony, and having no visible connection with it. The development of the colonies in the deeper portions of the gelatine, where the oxygen of the air does not penetrate, is apparently better than on or near the surface, but growth does occur in the latter situations, so that the organism is not a strict anaërobe. The gelatine is not liquefied. In sugar gelatine an abundant development of gas occurs.

Microscopical examination shows the colonies above described to be composed of the same bacillus observed in the direct examination of the exudate. The bacillus is slightly above the medium size, rather plump, with rounded ends. It is somewhat variable in length, but may be said to be about three times as long as broad. In its protoplasm one or two clear spaces may be seen centrally. In some cases in the centre of a rather short, plump rod a large and distinctly refracting, unstained oval body was to be seen, which was considered to be a spore. The bacillus is motile, occurs frequently in pairs, but not in chains, and is decolorized when subjected to the staining method of Gram.

Inoculations of a mouse and a guinea-pig subcutaneously with the material, and a guinea-pig subcutaneously with the culture, were made without any marked effect on the animals.

The identity of this bacillus is uncertain. It is clearly not the so-called "bacillus of malignant edema."

JAMES H. WRIGHT, M.D.

Here again was a case of clinical malignant edema with a similar but not identical bacillus.

Here are four cases, three of Dr. Post's, and one of my own, which were, clinically speaking, cases of malignant edema; in two of them it was definitely demonstrated that the bacillus present was not the Koch bacillus, although similar to it. Were not these cases, in all human probability, cases of infection due to the above-described bacillus of Welch?

In ending this very interesting article Dr. Post says:

In view of the foregoing I dare to draw the following conclusions: (1) Spores may find entrance to the human body and flourish there without the power of antiseptics to kill them; they must be mechanically removed if at all. (2) The symptoms of malignant edema may be caused by other spore-bearing, gas-producing organisms equally well as by the bacillus now known as the bacillus of malignant edema.

That the record of Dr. Post's conclusions was a true one Professor Welch has proven, and the two cases reported to-night serve to illustrate the fact and to call it again to our attention.

Now as to the lesson to be learned from these cases it seems to me to be this: Operate as early as possible, but operate even after the time when the whole of the diseased tissue can be removed if earlier operation is possible. In Case I the amputation was performed on the third day, but twenty-four hours later than the writer now believes it should have been done. The disease had already extended to the chest wall and the man died two days after operation, having in the interval *showed a marked remission* in the severity of his septic symptoms prior to death. In Case II the amputation was performed on the fourth day through diseased tissue. The disease made a last vain effort to progress after the operation, the emphysema extending as far as Poupart's ligament, but the operation removed the bulk of the disease and enabled the patient to take care of the remainder. Recovery followed. In Case III amputation just below the shoulder-joint was performed on the third day, at a time when the infection had extended over the shoulder and chest to the sternum. Both flaps were very emphysematous. The boy recovered.

In the face of such evidence it is hard to see how any surgeon can refrain from operating even if he fails to get the case at a time when his operation can remove all the diseased tissue.

REPORT OF CASES IN WHICH THE BACILLUS AËROGENES CAPSULATUS WAS FOUND.

BY JOSEPH H. PRATT, M.D., AND FRANK T. FULTON, M.D.,
From the Pathological Laboratory of the Boston City Hospital.

In November, 1891, Dr. Welch reported the discovery of a gas-producing bacillus in the blood and tissues of a man who died after the rupture of an aneurism of the aorta. In 1892, Welch and Nuttall [1] published a careful study of this organism, which they named the bacillus aërogenes capsulatus. Their description was so complete that little has been added by subsequent investigators. Dunham,[2] in 1897, showed that the bacillus aërogenes capsulatus produced spores on blood serum. But even this is not a constant feature, and spore production has not been observed in any of our cases. In 1893, E. Fraenkel [3] demonstrated that the organism was the cause of gaseous phlegmons. In 1896, Welch and Flexner,[4] in an elaborate paper, showed that the organism had marked pathogenic properties and was the cause of a variety of pathological processes. Doubtless the gas bacillus is a more common and widespread infectious agent than is generally supposed. Bloodgood [5] has recently collected 22 cases of emphysematous phlegmon due to this organism.

Five * cases of invasion of the body by the bacillus aërogenes capsulatus have been observed at the Boston City Hospital during the past eighteen months. Two of these were surgical infections and are reported by Dr. Thorndike in this number of the JOURNAL. In the remaining three cases the micro-organism was found at autopsy, (1) in the blood and tissues of a man whose liver was ruptured by a fall; (2) in the pus of multiple abscesses of the liver; (3) in the fibrinopurulent exudate in a case of general peritonitis.

CASE I. RUPTURE OF LIVER; DEATH IN TWELVE HOURS; BACILLUS AËROGENES CAPSULATUS IN BLOOD AND EMPHYSEMATOUS TISSUES.

Foster C., age twenty-six years. Admitted to Dr. Burrell's service at the Boston City Hospital, January 5, 1899, in a state of shock. Early that morning he had fallen the distance of two stories, striking on his left side and abdomen. It was found that he had fractured three ribs. Internal injuries were suspected. The bladder was irrigated with boracic acid. The fluid came back clear. He went into a condition of collapse, and, although stimulated, failed to rally, and died the same day at 6 P. M.

Autopsy (99.3) by Dr. Mallory, sixteen hours after death. Body 169 centimetres long; very stoutly built; rigor mortis marked. Lividity of face, neck, upper part of thorax, and dependent portions of body. Subcutaneous tissues of neck, upper part of thorax and lower portions of abdomen emphysematous. No evidence of post-mortem decomposition. Peritoneal cavity contains about 300 cubic centimetres of fluid and clotted blood. Peritoneum covering intestine beaded with small vesicles containing gas. Pleural cavities free from adhesions except over right apex, where several old fibrous adhesions are present. Pericardial cavity contains an excess of fluid; the serosa is stained red due to diffuse inhibition of blood coloring matter. Surface of heart shows everywhere beneath the pericardium minute bubbles of gas. Lungs are congested. A few interstitial blebs present. No evidence of any injury to lung. Heart: Weight, 340 grammes. Valves and cavities normal. Many bubbles of gas of various sizes beneath endocardium, especially of left ventricle. No gas in the heart's cavities or in the blood-vessels. Spleen: Weight, 210 grammes. Rather firm; on section lymph nodules fairly distinct; pulp dark in color. Gastro-intestinal tract: Stomach empty. Nothing unusual found in mucous membrane of intestine.

Liver: Weight, 2,560 grammes. In the left lobe is a long curved fissure beginning at the insertion of the round ligament and running parallel with the anterior border of the left lobe for a distance of 16 centimetres, and from three to four centimetres above it. In the right lobe is a similar fracture running parallel to the right border and five centimetres from it. It begins six and a half centimetres from the anterior edge of the liver and runs backward nine centimetres, and then extends at right angles and reaches almost to the right edge of the liver. The fracture of the left lobe extends through to the capsule on the under surface. There is another extensive fracture on the under surface of the left lobe running from before backwards across the middle. It begins near the anterior edge and runs back 14 centimetres, and then extends three centimetres towards the lower border of the liver. There is another extensive fracture beginning near the angle formed by the fracture just described and extending five centimetres, just up to the point of entrance of the portal vein. Still another fracture extends posteriorly from the portal vessels almost to the attachment of the diaphragm. On section, liver substance yellowish; lobules made out with difficulty.

Kidneys: Combined weight, 300 grammes. Apparently perfectly normal. Bladder empty beyond about two cubic centimetres of a turbid secretion evidently due to desquamation of epithelial cells. Testicles normal; adrenals normal. Pancreas large; small tear in the upper surface near the head, filled with small amount of clotted blood. Brain could not be examined. Organs of neck normal beyond some emphysema of the connective tissues. The seventh, eighth and ninth ribs on the left side, in the axillary line, are fractured. Aorta: A few slightly elevated yellowish streaks along posterior wall. Intima of aorta stained red with blood coloring matter. Subpericardial tissues where the gas bubbles are present and the emphysematous tissue over upper portion of thorax show the presence of numerous large bacilli, morphologically identical with the gas bacillus of Welch. They stain by Gram's method.

Anatomical diagnosis. — Multiple fractures of liver with hemorrhage into abdominal cavity; fracture of pancreas, fracture of seventh, eighth and ninth ribs on left side; extensive emphysema due to the bacillus aërogenes capsulatus; fatty infiltration of liver; fragmentation of the myocardium.

Bacteriological examination.— Twelve anaërobic cultures were made on various media from different parts of the body. In these there was a scanty growth, if any at all, of the large bacillus present in the cover-slip preparations. In none of the tubes was it found in pure culture. Attempts to grow it by transplanting from the original cultures and by animal inoculation failed. Some gas blebs appeared in a glucose agar tube inoculated with blood from the liver. A cover-slip preparation showed the bacillus in small numbers, and a variety of other organisms. There was no gas formation in glucose boujllon, contained in a Smith fermentation tube, nor in a gelatine stab culture inoculated with blood from the heart.

The organism was found in the original cultures from the following situations: Heart's blood, spleen, liver, lung, trachea, intestinal contents, subcutaneous fat over thorax, pectoralis major muscle. Aërobic cultures upon blood serum were made from the heart's blood, spleen, liver and kidney. In all the streptococcus pyogenes was present, and in addition a growth of a white staphylococcus was obtained from the liver and heart's blood. In the water of condensation of each tube were large bacilli, staining by Gram, and morphologically identical with those pre-

* Since this paper left our hands another case has occurred. At autopsy, in a patient dead of cerebral hemorrhage, on section of the liver some bubbles of gas escaped from the blood-vessels. Cover-slips showed an organism identical morphologically with the gas bacillus. There were no gas blebs in the liver. Some of the blood was inoculated into a rabbit and typical emphysema developed. A capsulated bacillus was recovered from its blood in pure culture which possessed the characteristics of the bacillus aërogenes capsulatus.

ent in the anaërobic cultures. These bacilli were not present on the surface growth of any of the aërobic tubes. As the blood contained vast numbers of the bacillus, it is not improbable that those found in the cultures were simply transferred from the tissues, and that no multiplication occurred upon the artificial media.

Microscopical examination. — Tissues were fixed in Zenker's fluid, imbedded in paraffine, and then stained with eosin followed by Unna's alkaline methylene blue. Heart: There is a marked fragmentation of many of the muscle cells. Often there is a space of twenty or thirty microns between the broken ends. Sometimes the fracture is near the end of a cell, sometimes near the centre. There are no areas of necrosis. The striæ of the muscle cells are well shown. The capillaries are congested. They contain a very few large bacilli. There are none of the organisms in the tissue outside of the blood-vessels. Blood clot from the heart shows large masses of the bacilli. They are also scattered diffusely throughout the fibrin in great number. Pectoralis major muscle: The muscle fibres appear normal. The veins are distended and contain a great number of the bacilli. Some vessels are apparently completely occluded by them. Here and there in the connective-tissue septa are large masses of the organisms; no other forms of bacteria are seen.

Lung: There is a serous exudate and some hemorrhage into the alveoli. The blood-vessels are congested; they contain great masses of bacilli; the alveoli also contain them, but in less number. No organisms are present in the bronchial tubes. Spleen: Contains much blood and there are large numbers of bacilli in the splenic pulp. Some of the cells of the lymph nodules show degenerative changes. In the lumina of the larger veins are a great many of the organisms.

Liver: Marked fatty infiltration. No bacilli in bile-ducts; fairly numerous in portal vein.

Kidney: The epithelium of many of the convoluted and straight tubules takes the stain poorly or not at all. The blood-vessels are moderately congested and contain the bacilli. The bacterium found in all the organs is a large, thick bacillus with square or slightly rounded ends; occasionally leptothrix-like forms are seen. It stains somewhat irregularly with methylene blue and also with aniline-gentian violet. It is not decolorized by Gram's method. No spores are demonstrable.

This case presents a puzzling but interesting feature. There was marked subcutaneous emphysema associated with the presence of a bacillus morphologically identical with the bacillus aërogenes capsulatus. Cover-slip preparations and tissues from various parts of the body show that this organism was present in great number, yet it was not possible to grow it upon artificial media. That the bacilli were dead when the autopsy was performed is, we think, the true explanation of these facts. Immediately after death the body was placed in the cold-storage room of the mortuary, where the temperature is usually maintained in winter a few degrees above the freezing point, but frequently falls, especially at night, to 26° F. The body was in the cold chamber sixteen hours. Of course some time elapsed before the deeper portions were cooled to the temperature of the refrigerator.

That the vitality of the gas bacillus is quickly destroyed by cold was recognized by Welch and Flexner. They record the following observations: In a case of inflammation of the urinary tract, "cover-slips from renal abscesses, renal pelvis, ureters, bladder, and perineal wound, showed a large number of bacilli with the morphology of the gas bacillus. . . . Contrary to our custom, cultures were not made at the time of the autopsy, but the organs, wrapped in wet cloths, were put on ice. Culture tubes inoculated the following day did not show the gas bacillus." In another case, "Dr. Blumer cultivated the gas bacillus from the kidney at the autopsy, and the following day failed to obtain it in cultures from the same organ, which had remained during twenty-four hours wrapped in wet cloths on ice."

The portal of invasion in our case is doubtful, but as the organism was found in the intestinal contents, it is not improbable that in the fall the walls of the intestine were so injured that the gas bacilli were able to pass into the circulation. The widespread distribution of the gas bacillus would indicate that it entered the circulation during life, but its multiplication was probably chiefly post mortem, before the body was sufficiently cooled to inhibit its growth.

CASE II. CARCINOMA OF COMMON BILE-DUCT; CHOLOTOMY; MULTIPLE ABSCESSES OF LIVER, FROM WHICH THE BACILLUS AËROGENES CAPSULATUS WAS ISOLATED.

Nathaniel R., age sixty-three years; rope maker. Admitted to the service of Dr. Thorndike, September 10, 1899. Family history negative. Personal history negative. Present illness began two weeks ago, with an attack of sharp pain localized in the epigastrium. This was followed by nausea, vomiting, and a severe chill. Since that time the patient has been constipated and has had no appetite. One week ago his urine became dark-colored, and at about the same time he became jaundiced. The diagnosis of obstruction of the common duct was made. At operation, eight days later, the gall-bladder was found considerably distended with bile and surrounded by adhesions. It contained two pea-sized black concretions. The obstruction was not located. The gall-bladder was sutured to the abdominal wall and drained with iodoform gauze. The patient appeared to improve until the fourth day, when vomiting set in, with considerable epigastric pain. Inability to retain anything taken by mouth continued until the patient's death, seven days after the operation.

Autopsy (99.156) by Dr. Fulton, thirteen hours post mortem. Body of a man sixty-three years of age, fairly well developed, but poorly nourished. Length, 172 centimetres. Marked rigor mortis. Much lividity of dependent parts. A marked general jaundice. No subcutaneous edema. No caput medusæ. No dilatation of superficial vessels. No enlargement of the axillary lymph nodes. About six centimetres to the right of the median line and on a level with the umbilicus is a closed linear incision, seven centimetres in length, extending upward and outward. Peritoneum smooth. Appendix vermiformis 11 centimetres in length, free, extends down into the pelvis. Its lumen is patent throughout. Mesenteric lymph nodes not enlarged. Pleural cavities: Lungs are adherent in many places by strong fibrous bands. Pericardial cavity smooth, contains a few cubic centimetres of straw-colored fluid. Heart: Weight, 315 grammes. The muscle is soft, brown, and on section shows a number of small, firm, whitish, irregular areas, some of them three to four millimetres in diameter. Coronary arteries smooth; valves normal. Frozen section shows very slight amount of fat and an abundance of brown pigment.

Lungs: Voluminous; the right larger than the left. Posterior portions are dark-colored and on section are moist, exuding a frothy fluid on pressure. Anterior portions are dry on section and in general deeply pigmented. Bronchial mucosa is deeply congested and covered with a thick layer of mucus. Bronchial lymph nodes are much enlarged, very black, some of them calcified. Spleen: Weight, 230 grammes. Capsule is smooth for the most part, but is adherent over its posterior portion. It is firm, and on section is grayish red. Malpighian bodies are prominent and trabeculæ easily seen. There is no increase in pulp. Stomach normal. Intestines: Small intestine contains a slimy, dark, greenish material. The colon is filled with light, clay-colored feces.

Liver: Weight, 200 grammes; dark red; friable; mark-

ings distinct. Here and there over the surface are small whitish areas, the largest three by four millimetres, which, when cut into, exude a grayish-white purulent material. A smear from this shows many pus cells and numerous large bacilli, with rounded ends, staining by Gram's method. On section these areas are seen in considerable numbers throughout the liver. The walls of these abscesses are fairly well defined and have a greenish, translucent appearance. The gall-bladder is the seat of an operation. The intestines are closely adherent to it and to each other in this region. It has been incised and contains no bile. The incision contains two small pieces of gauze drainage. The common duct is dilated throughout its length, the circumference being 4.5 centimetres. Just beneath the papilla biliaria is a small, firm nodule about one centimetre in diameter, which is freely movable beneath the mucosa, and is not attached to the pancreas. The gastrohepatic lymph nodes are enlarged, some measuring 1.5 centimetres in length. The opening of the common duct admits a probe with some difficulty. The pancreatic duct is dilated, having a lumen of about three to four millimetres, from which a clear fluid drops on section. The inferior portion of the pancreas is hard and nodular, and, for the most part, pale and homogeneous on section, but shows one small yellow patch about two millimetres in diameter. Retroperitoneal lymph nodes enlarged and very firm; the largest measure about two centimetres in length. On section they are pale, dry and homogeneous.

Kidneys: Weight, 290 grammes. Capsule slightly adherent, leaving a granular surface when stripped off. Tissue pale red; diminished consistence. Cortex measures three to four millimetres. On section, surface pale; the glomeruli appear as minute red points, and the cortex and the pyramids are not well differentiated. Some fat in the cells of the tubules. Adrenals normal. Bladder normal. Genitalia normal. Aorta: A few scattered, irregular, white, raised patches on the intima. In the thoracic portion is a small patch of calcification, measuring about one centimetre in diameter. Thyroid normal. Tracheal lymph nodes slightly enlarged.

Anatomical diagnosis. — Carcinoma of the common bile-duct with involvement of pancreas and retroperitoneal lymph nodes; multiple abscesses of liver; dilatation of pancreatic and common bile-ducts; chronic diffuse nephritis; chronic fibrous myocarditis; chronic fibrous pleuritis; chronic localized fibrous peritonitis; brown atrophy of heart; jaundice; cholecystotomy.

Bacteriological examination.— Smears from the liver abscesses stained by Gram's method show many well-preserved pus cells, large numbers of large bacilli, straight with rounded ends, staining deeply. A good many medium-sized bacilli with rounded ends, which decolorize, and a few scattered cocci occasionally in pairs retaining the stain. A few of those, morphologically like the large ones, decolorize. Anaërobic cultures in milk, agar, and bouillon all showed the three forms above mentioned. Two loopfulls from the surface of an agar culture were suspended in about one centimetre of bouillon, and injected into the ear vein of a rabbit which was killed in fifteen minutes, put in the thermostat at a temperature of 36°, and left for twenty hours.

Autopsy. — Abdomen of the animal greatly distended; marked general subcutaneous emphysema, particularly over thorax and inner side of thighs. Abdomen punctured with a trocar. The escaping gas burns with a blue, extremely hot flame for one minute. Smears from the subcutaneous tissues show the large bacilli in considerable numbers. Gas blebs abundant in the subcutaneous connective tissues. Small amount of serosanguinous fluid containing oil droplets in the peritoneal cavity. Fundus of stomach and spleen congested. Thorax contains much gas. Lungs greatly collapsed. Heart and large arteries and veins contain gas. Heart's blood contains many characteristic large bacilli. Lungs contain many bacilli. Liver very friable, a few gas blebs seen on surface and bubbles can be squeezed from it. Gall-bladder shows bacilli in smears. Kidney pale, granular and friable, containing no gas but many bacilli. Cultures made from heart's blood, peritoneum and liver. In most of the cultures the three organisms are found. In the cultures from the peritoneum the large bacillus predominates. There is much gas produced in the water of condensation and in the agar. Milk is coagulated, decolorized, and digested. The organism produces characteristic colonies on blood serum. The medium-sized bacillus which decolorized by Gram's method is motile in twenty-four-hour cultures, acidifies milk, grows diffusely on potato, produces gas in glucose bouillon, forms indol in glucose-free bouillon and does not liquefy gelatine. It is the bacillus coli communis. The lanceolate coccus is often in pairs, forms minute pin-point translucent colonies on blood serum, shows a very slight growth on potato, coagulates and decolorizes milk, produces no gas and no indol. In ten days gelatine is liquefied along the stab and also over the entire surface to the depth of one centimetre. A guinea-pig, weighing 100 grammes, was inoculated subcutaneously with one cubic centimetre of a twenty-four-hour culture; no symptoms developed. It is a non-pathogenic organism not identified. Cultures from heart's blood and spleen negative. Kidney and lung contain a diplococcus, with the same characteristics as that in the liver, and the colon bacillus.

Microscopical examination.— Tissues were fixed in Zenker's fluid, imbedded in paraffine, and stained with eosin followed by Unna's methylene blue. Sections of the liver show a slight cirrhosis, but the chief interest is in the abscess formation. In each of these is an area of necrotic, structureless material, portions of it hyaline, staining deeply with eosin, portions finely granular, staining with methylene blue. Immediately surrounding this are numerous poorly preserved polynuclear leucocytes and some phagocytic cells. Surrounding the abscess is an ill-defined wall composed of connective tissue containing a few liver cells and infiltrated with leucocytes and many eosinophiles. Beginning abscesses are seen in connection with the bile-ducts. In some cases the ducts are simply dilated with leucocytes, while the epithelium remains intact. In others, farther advanced, the epithelial wall remains on only one side of the abscess. About the ducts the tissue contains many plasma cells and numerous eosinophiles. From these appearances, it seems fair to assume that the infection entered by way of the bile passages. No bacteria are found in the sections except some which are morphologically and in staining reaction like the gas bacillus. Even these are not very abundant. They are found in connection with the abscesses and some are within the bile-ducts.

This case resembles closely that reported by Larkin[6] in which there was obstruction of the common duct and multiple hepatic abscesses. In connection with the fact that no gas formation took place in the liver, two of the cases mentioned by Bloodgood[5] are of interest. One was a laceration of the scrotum in which the gas bacillus was found in the tissues but was unaccompanied by emphysema. The other was a case of infection after ligation of the femoral artery for a popliteal aneurism. Gangrene of the leg followed the operation. Symptoms of infection accompanied by emphysema of the tissues appeared on the tenth day. The gas bacillus was found and the leg was amputated. Two months later a second amputation was done for the granulating stump. The bacillus aërogenes capsulatus was again found in a small subcutaneous abscess, but there was no gas. In a unique case reported by Gwyn,[7] in which he repeatedly isolated the organism from the blood during life, there was also no formation of gas.

CASE III. PERFORATING GASTRIC ULCER; GENERAL PERITONITIS, IN WHICH THE BACILLUS AËROGENES CAPSULATUS WAS THE PREDOMINATING ORGANISM.

John D., age twenty-three years. Shipping clerk. Admitted to the service of Dr. Monks, November 25, 1899.

Family history negative. Personal history of no importance, except that for the last two weeks the patient has been indisposed and has lost weight. Has complained of distress after eating; no vomiting; no hematemesis. November 25th, in the afternoon, the patient was suddenly taken with cramp-like pains all over the abdomen. Pain continued until admission twenty-four hours later. No vomiting until after admission. On admission, patient was in much pain, pale and anxious. Pulse 130 and weak. Abdomen immensely distended, tender, tympanitic except in flanks, where there is some movable dulness.

Operation. — The abdomen was opened, and a dirty brownish fluid with much fibrin and gas escaped. Peritoneum red and roughened. The patient failed rapidly and the operation had to be abandoned before the perforation was found. Death occurred two hours later.

Autopsy (U. 99.36) by Dr. Fulton, sixteen hours post mortem, at the undertaker's, in the presence of friends. Partial autopsy only permitted. Organs not removed. Peritoneal cavity filled with a dirty brown fluid. Some gas escaped on opening. Peritoneum covered with scattered flakes of fibrin. Intestines much congested. Here and there are dark areas about one centimetre and less in diameter, apparently hemorrhages into the intestinal wall. Mesenteric lymph nodes enlarged. Appendix normal. Spleen somewhat increased in size and quite soft. Stomach: On the anterior surface is a round opening measuring seven millimetres in diameter, through which gas and stomach contents escape. Stomach much dilated. Permission obtained to remove stomach. The opening mentioned is two centimetres below the lesser curvature; six centimetres from the esophageal opening, and 11 centimetres from the pylorus. Over an area, five by six centimetres, surrounding the opening the peritoneal surface is whitish, opaque, with evidence of slight recent adhesions. From the inner surface the perforation is seen to be funnel-shaped, the inner orifice being 1.75 centimetres in diameter. The walls are very sharply defined, giving the appearance of having been punched out, except that they are slightly terraced, indicating the different coats of the stomach. The wall at this point measures one centimetre thick, thinning gradually for a distance of two to three centimetres from the ulcer. Posterior surface is slightly congested. No other ulceration.

Anatomical diagnosis. — Simple perforating ulcer of the stomach; acute general fibrinopurulent peritonitis; hemorrhages into intestinal wall; hyperplasia of mesenteric lymph nodes.

Bacteriological examination. — A smear from the peritoneal exudate shows vast numbers of large, thick bacilli which resemble morphologically the bacillus aërogenes capsulatus and stain deeply by Gram's method; a moderate number of medium-sized bacilli, and a very few slender bacilli, both of which decolorize by Gram, and a few lanced-shaped cocci or short bacilli, often in pairs, not decolorizing. One culture made from the peritoneal cavity. The medium bacillus noted in the smears gives the cultural characteristics of the bacillus coli communis. After the smear was examined and the large bacillus noted, the tube was cultivated anaërobically (in a Buchner jar). A few large, thick bacilli were found in the water of condensation. This was inoculated into the ear vein of a rabbit, which was killed in fifteen minutes and placed in the thermostat over night. Autopsy the next morning. Animal much swollen and gives off an offensive odor. Peritoneum punctured and gas allowed to escape but cannot be demonstrated definitely to burn. Much subcutaneous emphysema. Gas and a chocolate-brown, oily fluid in the peritoneal cavity. Gas in pleural cavities and large blood-vessels; none in the pericardium. Smears from the subcutaneous tissue, heart's blood, liver and peritoneal cavity show many large, thick bacilli not decolorizing by Gram's method, and with an easily demonstrable capsule. Cultures show the bacillus aërogenes capsulatus, the bacillus coli communis, and an unidentified small bacillus.

In this case of acute general peritonitis the gas bacillus was the predominating organism in the exudate. It has already been well recognized as at least a contributing cause of peritonitis, and Welch and Flexner[4] report a case of peritonitis due to perforating cancerous ulcer of the duodenum in which the organism was obtained in pure culture. They also report three cases of peritonitis due to the perforation of typhoid ulcers in which the gas bacillus was present, but in association with other organisms. They also mention a case of perforating gastric ulcer in one of their stock rabbits in which the peritoneal exudate contained the gas bacillus.

CONCLUSIONS.

Only one of our five cases (Dr. Thorndike's first case) was a pure infection with the gas bacillus. This case shows what marked pyogenic properties the gas bacillus may possess. In three cases the organism appeared to gain entry into the tissues from the gastro-intestinal tract. In two, infection was probably referable to dirt containing the gas bacillus which gained access into the body through wounds of the skin.

Our first case shows how readily the organism may be destroyed by cold.

The lesions produced by the gas bacillus on muscle tissue are most remarkable. This was shown in both the cases of emphysematous gangrene reported by Dr. Thorndike. In some places the muscle fibres were broken into small pieces, varying in size and shape. The fragments were separated one from another and laid in different planes. Their torn edges were distinct; their striæ well preserved. The appearance was of débris thrown about by an explosion. In other places degeneration and digestion of the muscle fibres appeared to have taken place. This digestion is shown by the soft, mushy consistence of the muscle fibres, which can be teased apart with the greatest ease.

REFERENCES.

1. Welch and Nuttall. Gas-producing Bacillus (bacillus aërogenes capsulatus, Nov. spec.) Capable of Rapid Development in the Blood Vessels after Death. Johns Hopkins Hospital Bulletin, 1892, iii, 81.
2. Dunham. Report of Five Cases of Infection by the Bacillus Aërogenes Capsulatus (Welch). Johns Hopkins Hospital Bulletin, 1897, viii, 68.
3. Fraenkel. Ueber der Ætiologie der Gasphlegmonen. Cent. f. Bakt., 1893, xiii, 13
4. Welch and Flexner. Observations Concerning the Bacillus Aërogenes Capsulatus. Journal of Experimental Medicine, 1896, i, 5.
5. Bloodgood. Emphysematous Cellulitis. Progressive Medicine, 1899, iv, 158.
6. Larkin. Hemorrhagic Pancreatitis with Fat Necrosis; Abscesses of Liver; Infection with Bacillus Aërogenes Capsulatus. Medical Record, 1898, liii, 354.
7. Gwyn. A Case in which the Bacillus Aërogenes Capsulatus was Repeatedly Isolated from the Circulation during Life. Johns Hopkins Hospital Bulletin, 1899, x, 134.

Clinical Department.

A NEW METHOD OF INTRA-ABDOMINAL OPERATION FOR RETROVERTED UTERI.

BY GEORGE W. KAAN, M.D.,

Assistant Surgeon, Free Hospital for Women; Instructor in Clinical Gynecology, Tufts College Medical School, Boston.

THE present methods for holding the uterus in position, in cases where the abdomen has been opened, are practically three; namely, folding the round ligament upon itself and stitching the folds together; drawing the two round ligaments into apposition ante-

rior to the uterus and suturing them there; and finally, ventral fixation or suspension. The operations upon the round ligaments have not met with popular favor, and apparently most operators prefer some form of ventral suspension or fixation, even while feeling that it is not the ideal operation.

Fixation of the uterus brings it into permanent apposition with the abdominal wall and into an abnormal position, perhaps not so bad as retroversion, yet bad enough to be productive of many disagreeable symptoms, and a dangerous position for subsequent pregnancy.

Suspension of the uterus brings it into temporary abnormal apposition with the abdominal wall, and is intended to be followed by the formation of bands of adhesion, of uncertain length and strength, extending from the fundus to the anterior abdominal wall. The results are not always satisfactory; the uterus may be attached too high or too low on the abdominal wall, and the adhesion bands may stretch enough to allow the uterus to return to its retroverted position. Furthermore, cases have been mentioned of fatal intestinal obstruction due to these bands.

In view of my experience and that of others with the above operations, I have lately tried a new method, to which as yet I can see no objectionable feature, and which leaves the uterus in a more normal position, with natural unimpaired mobility from the start.

In all cases of retroverted uteri the round ligaments, with the peritoneal covering, are elongated, and my method consists simply in puckering them upon a gathering string, and so shortening them that the uterus is brought into normal position. In the cases I have operated upon this is exactly what has happened.

I have picked up the round ligament and peritoneum together with a double hook, about midway between the cornu of the uterus and the internal abdominal ring; then passed a suture of silk subperitoneally from the uterus as far outward along the round ligament as seemed necessary. The tissue is puckered along this suture, the two ends of which are then tied together with moderate traction. To avoid its cutting through, the silk used is of medium size, and is passed into the tissue of the fundus at its point of entrance, and through ligamentous tissue at its exit. The strain on this stitch, however, is not nearly so great as upon the stitches of a ventral suspension, which drags the uterus out of position.

I have had this operation in mind for some time, but have tried it only lately. It surely avoids the defects of other operations, but its value must be determined by extended trial, and I submit it to the profession, hoping it may be tried by others.

New Instrument.

A NEW NASAL SCISSORS FOR THE REMOVAL OF THE LOWER TURBINATE.

BY CAROLUS M. COBB, M.D., BOSTON.

In removing the whole or a part of the lower turbinate bone, I have found a pair of scissors, which Codman & Shurtleff, of Boston, made for me, to be of very great advantage. The accompanying cut gives a very good idea of the instrument. It is much more convenient to use than the turbinate saw and leaves a cleaner cut than does the saw. The fault with most nasal scissors is that the blades are not firm enough to cut through the body of the turbinate; the blades either slip by each other or one is not able to put force enough onto the handles to make the points cut anything more than the mucous membrane. The

blades of this instrument are short and the whole so strong that the blades will cut through any part of the lower turbinate. The shape of the instrument allows the operator to reach any part of the lower turbinate that can be reached by the saw or by any other instrument except the cold wire snare.

Reports of Societies.

AMERICAN SURGICAL ASSOCIATION.

TWENTY-FIRST ANNUAL MEETING, HELD AT WASHINGTON, D. C., MAY 1, 2 AND 3, 1900.

FIRST DAY.

After the announcements of the Committee of Arrangements and executive session, Dr. Robert F. Weir, of New York, gave the Presidential Address on

PERFORATING ULCER OF THE DUODENUM.[1]

The perforation usually is located within one and one-half inches of the pylorus, more commonly on the anterior wall; in 80 per cent. of the cases the ulcer is single, in eight per cent. it is double, while in the remaining cases more numerous perforations occur. The cause of ulceration is difficult to determine; it has been attributed to habits of life, to circulatory disturbances, to the naturally delicate condition of the mucous membrane, to sepsis, burns, etc. Lockwood has collected 138 cases of burns treated by modern methods, and duodenal ulcer occurred in only one case. The affection is comparatively rare, occurring in about two per cent. of all necropsies. Patients are of all ages, but it is more common between twenty and fifty. In many cases healing occurs without serious results, but in some cases cicatricial contraction results. The symptoms are often vague, and may be entirely wanting. The patient's previous history is of great importance; there is usually pain, tenderness and vomiting; hematemesis, blood in the stools and jaundice may be present. Pain usually follows some time after eating; hematemesis is less frequent than with gastric ulcer; vomiting is of importance if combined with

[1] See No. 18, p. 445, of the Journal.

other symptoms; jaundice rarely follows cicatricial contraction. Blood in the stools generally gives them a tarry appearance, but in some cases the blood may be bright red. Great advances have been made in the diagnosis of such conditions of late, and Weir believes that the differentiation from gastric ulcer is not impossible. The symptoms of perforation are sudden acute pain, vomiting, shock. Later the symptoms of localized or general peritonitis supervene. The obliteration of liver dulness is not of much value, as resonance may result from a distended colon. As in perforating gastric ulcer, the mortality depends much upon the time elapsing between perforation and operation. Of 13 cases operated upon over thirty hours after perforation all died. In the earlier cases the perforation was often not found or sutured, but among later cases the perforation has been found and closed in 35 per cent. of the cases, and there is much less confusion of the diagnosis with various forms of intestinal obstruction, appendicitis, etc.

The treatment of non-perforating duodenal ulcer is seldom surgical, although in some cases gastro-enterostomy may be considered. In operating, Weir advises a long incision along the edge of the rectus muscle, then the fascia is cut transversely. If the perforation is not discovered on the anterior wall after wiping away the exudate the posterior wall should be examined. Methylene blue taken by the mouth may aid in the diagnosis. The perforation is closed by two or three rows of sutures. Excision of the ulcer is unnecessary. Closing of the perforation is but half the battle; the careful cleansing of the peritoneum is of the highest importance. If dilatation of the stomach or obstruction to the flow of bile results from cicatricial contraction, gastro-enterostomy may be performed. Weir has prepared a synopsis of 51 cases, including one case in which he personally operated, upon which he based his paper.

DR. WILLIAM L. RODMAN, of Philadelphia, read a paper on

GASTRIC ULCER, NON-PERFORATING; HEMORRHAGE.

The paper was based upon an exhaustive study of the statistics, and Dr. Rodman devoted his attention mainly to the treatment. He showed the fallacies of the statistics on this subject by Mayo Robson. The various operations which have been practised for hemorrhage were discussed. Gastro-enterostomy has been most commonly performed, and probably will continue to be because of the difficulty in locating the ulcerated vessels. In 55 necropsies the splenic artery was found to be ulcerated 17 times. Excision of the ulcer is the ideal operation unless there are strong adhesions, and the mortality in those cases in which this operation has been performed is less than that of gastro-enterostomy. Operation for acute hemorrhage is advised, with limitations, but operation for chronic hemorrhage is always indicated.

DR. J. M. T. FINNEY, of Baltimore, read a paper on

PERFORATING ULCER OF THE STOMACH.

Finney mentioned the great interest which has been taken in this subject of late, the increased number of operations and the many exhaustive papers which have recently been published. It was not until twelve years after Mikulicz first operated, in 1880, that the first successful case was reported by Kriege. During the first sixteen years only 78 cases have been reported, but since then the number has rapidly increased until, with Finney's own recent tabulation, the number up to date is 268 cases. Of 35 patients that have been treated in the wards of Johns Hopkins Hospital for gastric ulcer, perforation has occurred in but one case, and death resulted before operation could be completed. The affection is most frequently met in young women of the lower walks of life; in men it usually occurs after forty years of age.

The site of the ulcer is more commonly on the anterior wall of cardia, next most frequently the pylorus, then along the lesser curvature, and, finally, the posterior wall. In about 20 per cent. of the cases there is more than one perforation. The severity of the symptoms arising depends on the size of the perforation, the amount and character of gastric contents, the variety and number of bacteria present. If the stomach be empty the chances for recovery are much more favorable. The stomach is capable of sterilizing itself, as the acid gastric juice kills many bacteria, but many may persist buried deeply in the mucosa. There are no symptoms of impending perforation, but Finney believes that the blood count and the finding of leucocytosis is of great diagnostic value. It is improbable that over five per cent. of patients with perforation recover without operation, and if operation is delayed septic peritonitis will supervene in case no limiting adhesions form. The less opium given the better in these cases. Operation should not be delayed until the patient has recovered from shock, but the sooner performed the better will be the results. Early exploratory operation is urged in case there is doubt as to the diagnosis. Cocaine anesthesia is sufficient in such cases; cover-slip preparations and cultures may be taken and the abdomen closed, provided no lesion is found. If necessary to continue the operation a general anesthetic may be administered. The cause of death in these cases is usually sepsis, but there has been much improvement in the results of late. While the percentage of recoveries, which is now placed at 87 per cent., may be somewhat too high, it is a great improvement over the five per cent. of recoveries which follow without operation.

WM. J. MAYO, of Rochester, Minn., read a paper on

MALIGNANT DISEASES OF THE STOMACH AND PYLORUS.

Mayo considers carcinoma of the stomach a strictly surgical disease. Early diagnosis is of the highest importance, and the surgeon should not wait to have the physician make it for him. Exploratory incision is as justifiable as in the case of the breast and uterus. The curability of malignant disease depends upon the histologic structure of the growth, its location, extension to neighboring tissues, glandular involvement and the general condition of the patient. If the tumor has a large amount of stroma its growth will be slow, and the reverse. Disease of the cardia is generally easily diagnosed, but radical intervention is likely to be impossible, and while diagnosis of disease of the pylorus is difficult the prognosis is much better. Infection of the lymphatic glands is not as common as in malignant disease of some other organs, and if present radical operation will probably be impossible.

In the beginning each operation is an exploratory

incision for methodical examination, having in view the question of radical operation, palliation or the inadvisability of attempt at relief. Even after the abdomen is opened it is often difficult to determine whether the growth be malignant. Mayo believes that in the future the more radical operation of gastrectomy will be more frequently performed. He points with pride to the fact that the first total gastrectomy was performed by Connors, an American; while Schlatter was successful, he was not original. In the case of more localized growths pylorectomy by Kocher's method is preferred. Operation in two stages: first gastro-enterostomy and some weeks later pylorectomy shock the patient less and give opportunity for him to gain strength before the final operation, but there is likely to be some trouble with adhesions if this method is followed. Curetting or the use of the cautery as a palliative measure is not favored. Gastro-enterostomy is the most generally useful palliative operation. Whether it be performed by suture will depend on individual preference and experience. Mayo uses the Murphy button without suture. He questions the supposed advantages of posterior gastro-enterostomy by von Hacker's method, and personally prefers the anterior operation. If the anastomosis between stomach and intestine be made about an inch above the lower border of the stomach regurgitation of intestinal contents and vomiting of bile will be uncommon. Entero-enterostomy in addition to gastro-enterostomy is usually but an unnecessary complication of the operation.

SECOND DAY.

DR. FREDERICK KAMMERER, of New York, read a paper entitled

BENIGN OBSTRUCTION OF THE PYLORUS.

Obstruction of the pylorus may be either congenital or acquired: there may be acute stenosis at birth as the result of fetal peritonitis, or congenital hypertrophy may exist.

Acquired stenosis most commonly is an after result of gastric ulcer; it may result from occlusion by benign tumors, from syphilitic gumma, from gall-stones obstructing the pylorus, from spastic contraction from hyperchlorhydria. If medical treatment fails, daily lavage, rest and careful diet, surgical treatment is indicated. Kammerer mentioned surgical treatment by dilatation of the stricture, simple division of adhesions and resection of the pylorus, but he devoted most of his paper to the discussion of pyloroplasty and gastro-enterostomy. Study of a large collection of statistics shows the present mortality of pyloroplasty to be 15 per cent., while that of gastro-enterostomy is 17 per cent., but the mortality of the latter operation is much lessened now and it is doubtful if it is really higher than that of pyloroplasty. The mortality of resection of the pylorus is about 28 per cent., according to Mikulicz; that of Loretta's operation is also great and both these procedures have practically passed out of use. Adhesions may reform after pyloroplasty, causing return of obstruction, but not after gastro-enterostomy. Gastro-enterostomy is likely to be followed by regurgitation of fluids from the intestine, perhaps as the result of the formation of spurs, kinks or twists. Anterior gastro-enterostomy does not empty the stomach so freely in the recumbent position, and in some cases complications arise from the small intestine encircling the colon, hence posterior gastro-enterostomy is preferred. Kammerer has performed eleven posterior gastro-enterostomies with Murphy's button, with one death from exhaustion and one from pneumonia. In the remaining cases the after results were excellent; there was no difficulty from spur formation or regurgitation. As to the after results from these operations, the motor function is generally increased and there is reduction in the size of the stomach, but never to normal. There is no reflux of bile and intestinal fluids after pyloroplasty, but there is less reduction in the size of the stomach than after gastro-enterostomy, and there is the possibility of recontraction from inflammatory thickening or reformation of adhesions. The fact that the results are always as good after gastro-enterostomy, and sometimes much better, makes this the operation of choice in such cases.

DR. B. F. CURTIS, of New York, read a paper on

GASTRIC DILATATION — GASTROPTOSIS.

In a discussion of the anatomy of the stomach Dr. Curtis called attention to the fact that under normal conditions the pylorus can scarcely be palpated and the lesser curvature not at all. Dilatation may arise from obstruction to the outlet of the stomach from benign or malignant tumors or from atony of the stomach walls, or from a combination of these causes. Atony of the stomach walls in its turn may result from some constitutional disease or from repeated overloading. The prognosis in atonic dilatation under medical treatment is unfavorable and operation is indicated when the patient is losing ground under systematic lavage and dietetic and medical treatment. The mortality of the operation of gastroplication is low and in properly selected cases the results are good; the choice of cases is difficult, however.

The details of the operation have been variously modified from the simple folding and suture first proposed by Bircher. Dr. Curtis favors Weir's method, using several rows of sutures. Gastroptosis may be of three varieties; there may be simply fixation of the cardia and sagging of the pyloric end; this may be so extensive that we have to deal with a vertical stomach, or both cardia and pylorus may be fixed and the stomach sag in a U-shape. Dr. Curtis mentioned five operations without any accidents; improvement is not difficult to obtain whatever method of operation be adopted.

DR. F. S. WATSON, of Boston, read a paper on

HOUR-GLASS CONTRACTION OF THE STOMACH.

Hour-glass contraction of the stomach has existed as a surgical affection for only ten years and during that time 35 cases have been operated upon. The methods employed have been gastro-enterostomy, plastic operation and gastro-anastomosis by Wölfler's and Watson's own method. Dr. Watson first folds the stomach with the constricted part as a hinge; the sac nearest the pylorus is then fastened to the cardiac portion by four stay sutures and then the two sacs are securely sutured before opening the stomach; a longitudinal opening is then made in the stomach wall and the double partition between the two sacs is excised. The first patient upon whom Dr. Watson operated gained forty-two pounds in the year after the operation; she remains well and is doing her work five years after the operation. In a second case, a woman who had a long history of gastric ulcer was taken

with symptoms of perforation. Operation was performed and the perforation was sutured. The abdominal cavity and pelvis were infected at the time of operation, and the patient died four days later. At the necropsy the stomach was found to have an hour-glass shape, a fact that was not recognized at the time of operation because of adhesions. The pyloric end was also pulled up and attached to the lesser curvature by adhesions. As regards the choice of operation, Dr. Watson believes that gastro-enterostomy should not usually be performed in such cases, because the digestive function of the second sac is lost; after plastic operation there is danger of recontraction of the opening and the operation is not applicable if the opening between the two pouches is small. Under favorable conditions gastro-anastomosis is the preferable operation; if adhesions exist they should be freed if the patient's condition permits.

DR. JOHN C. HEMMETER, of Baltimore, read a paper on

DIAGNOSIS OF CANCER OF THE STOMACH.

The only diagnosis of carcinoma that is of interest to the surgeon is the early diagnosis, and as there is a period of three months before any definite signs appear, this is very difficult. The first symptoms resemble those of nervous dyspepsia or chronic gastritis. The methods necessary for chemical and microscopical investigation are time robbing and not generally suited for general practice. Such symptoms as pain, dyspepsia and the appearance of blood are of little value, because found in other conditions. The absence of free HCl is an important symptom, but it may not be present, even at the end of the disease. The presence of lactic acid is a sign of stagnation and is not present till there is pyloric obstruction. It is present in about 84 per cent. of the cases of cancer. The Oppler-Boas bacillus is present in 53 out of 55 cases of carcinoma, but, like lactic acid, it may be present with benign growths. There is little hope of a diagnosis from gastroscopic examination and it is not without considerable danger. The use of the x-rays is futile and electrodiaphany is of no value until there is great thickening. Curetting the stomach by the stomach tube gives positive evidence of carcinoma if the growth has disintegrated. The appearance of atypical and asymmetrical mitoses in the cells of the tissue undergoing transformation if present is highly suggestive.

Until we gain a knowledge of the true nature of the disease, early diagnosis and successful treatment will be impossible and gastric surgery can be only palliative. In all cases of nervous dyspepsia or chronic gastritis, if there is no benefit resulting after four weeks' medical treatment, if there is lessened peristalsis and no free HCl, if atypical mitoses are found, exploration is indicated.

DR. A. T. CABOT, of Boston, read a paper on

ADHESIONS OF THE STOMACH.

Ulcer of the stomach or duodenum and inflammatory conditions of the gall-bladder most frequently give rise to adhesions. The symptoms, if mild, often remain unrecognized, and may simulate biliary colic. Pain may be a marked symptom or it may be moderate and pass unnoticed; it does not radiate to the shoulder and is not spasmodic. In cases in which there is a history of ulcer, or the symptoms of stone in the gall-bladder, Dr. Cabot believes that operation for the freeing of adhesions is often advisable, even if the pain be not severe. His results, after such operations, have been very favorable.

GASTRIC FUNCTIONS BEFORE AND AFTER GASTRO-ENTEROSTOMY.

DR. C. S. FISCHER, who read this paper, believes that the results of German investigators who have studied this subject are of little value because of the short time that their patients were under observation. He reports a case that was under observation for four years for disturbance of motor function and hyperacidity before operation. This patient remains under observation two years after operation; the hyperacidity continues and has been progressive, the dilatation is less and the motor function is improved. In another case the hyperacidity was reduced, but becomes pronounced after emotional disturbances. Fischer believes that structural changes begun before operation are likely to continue after operation; in general, the motor function is improved and the intestinal function is also improved.

STRICTURE OF THE ESOPHAGUS FOLLOWING TYPHOID FEVER; GASTROSTOMY.

DR. FREDERIC S. DENNIS, of New York, presented this paper. A man of thirty-five was shown before the society, and in Dr. Dennis's absence his paper was read by the Secretary. During the latter part of an attack of typhoid fever of three months' duration, the patient was taken with a burning sensation in the lower part of the esophagus, and later difficulty of deglutition followed. He was treated by dilatation with bougies for three months, but his condition became progressively worse. Rectal feeding was resorted to, but the patient became bedridden from exhaustion; he lost flesh until he weighed but 100 pounds, he was cyanotic, almost pulseless, and in such constant agony that he begged for any form of relief. At the time of operation he had taken no food by the stomach for three months. Gastrostomy was performed and since then the patient's condition has progressively improved; he now works hard, weighs 180 pounds and is able to enjoy life in spite of this method of feeding.

DISLOCATIONS OF THE HIP; DEMONSTRATIONS ON THE CADAVER ILLUSTRATIVE OF THEIR MECHANISM.

DR. OSCAR H. ALLIS, of Philadelphia, presented this paper. He called special attention to the value of this method for purposes of demonstration before classes. He demonstrated on the cadaver the method of producing different dislocations, their signs and the method of reduction, verifying his statements by incisions. He laid special stress on the necessity for fixation of the pelvis during reduction, the fact that the most important factor in reduction is to find the opening in the capsule from which the head escaped and that by traction the head may be drawn up on the acetabulum and then pushed in by an assistant. By this method reduction can be accomplished even if the bone be divided.

THIRD DAY.

DR. W. W. KEEN, of Philadelphia, opened the discussion on

SURGERY OF THE STOMACH.

Malignant disease of the stomach is of more importance at the present than non-malignant disease, because of its greater frequency and because of the great difficulties in diagnosis. During the past few years the specialist on gastric diseases has given the surgeon great aid in the diagnosis. Hemmeter has called attention to the fact that if operation is to be successful it must be performed within the first three months of the disease, and if the specialist finds any probability or even a possibility of this disease exploratory operation is indicated. There is little danger in exploratory incision, but there is danger in late operation that we shall be able to accomplish nothing. If a palpable tumor is present recurrence is almost inevitable.

DR. M. H. RICHARDSON, of Boston, believes that all methods of diagnosis should be exhausted before we resort to exploratory operation, but in case of doubt open the abdomen as soon as possible in all surgical affections of the stomach. In case of hemorrhage operation is not advisable unless medical means have failed. Perforation demands immediate operation, but the diagnosis is sometimes difficult. In case of carcinoma the time for operation is before the tumor is felt, but not one case in fifty is suitable for operation at the time it comes to the surgeon. Total extirpation probably has a more limited field than was at first believed.

DR. T. A. MCGRAW, of Detroit, described a method of performing gastro-enterostomy by means of an elastic ligature, which he introduced some years ago, but abandoned for Murphy's button. He gave the details of a case in which he performed anastomosis in this way, but the patient died of inanition fifteen days later; at the necropsy it was found that the stomach was united to the ileum only about three feet above the ileocecal valve. The method of anastomosis is to pass the needle through about an inch of stomach and intestine and tie firmly. It takes about three or four days for the ligature to cut through.

DR. DUDLEY P. ALLEN, of Cleveland, reported a case in which he operated on a patient that was apparently moribund. A perforation was found low down on the posterior wall; gauze was packed down to the perforation and recovery followed. Cultures taken from the abdomen at the time of operation failed to demonstrate the presence of any bacteria and possibly that accounted for the favorable result. In another case in which he operated for gall-stones the patient died seventeen days later from hemorrhage from a gastric ulcer. In a third case a patient who had vomited blood and passed blood by the rectum was found to have an ulcer connecting the stomach with the colon. Dr. Joseph Ransohoff, of Cincinnati, advises operation for malignant diseases of the stomach in two stages: preliminary gastro-enterostomy, then, about two weeks later, pylorectomy.

DR. CHARLES B. NANCREDE, of Ann Arbor, Mich., reported a series of experiments which show that infection with the colon bacillus is not ordinarily the cause of death, but if morphine is administered, a fatal result is likely to follow. He emphasized the desirability of statistics as to the results of pylorectomies by the members of the Association. He does not believe there is 90 per cent. mortality after this operation; if so, it is not a justifiable procedure.

DR. JAMES E. MOORE, of Minneapolis, mentioned a case that was referred to him by a specialist on stomach diseases. There had been previous good health till within three weeks, then the only symptom was pain and absence of free HCl. On opening the abdomen the disease was found too extensive for removal. In case of hemorrhage from gastric ulcer the ulcer would often be found if exploration were continued to the duodenum.

DR. S. H. WEEKS, of Portland, Maine, states that operations for carcinoma up to the present time have not proved curative, and he advocates gastro-enterostomy in such cases. He favors operation with the use of sutures rather than by Murphy's button. He uses catgut sterilized by boiling in juniper oil as a suture material.

DR. L. C. TIFFANY, of Baltimore, believes that pylorectomy is justifiable only in rare cases. He has operated in a number of cases referred to him by Hemmeter and invariably found enlarged glands which precluded further intervention. As in the case of oöphorectomy and appendectomy, the pendulum will probably swing in the direction of useless exploratory intervention, until we learn by experience, by actual handling of cases, the real conditions and indications for operation.

DR. R. F. WEIR, of New York: While a diagnosis is impossible, we operate for the relief of such symptoms as pain, hemorrhage and dilatation. As yet it is not definitely settled what operations and what methods are most desirable. Weir personally prefers posterior gastro-enterostomy in combination with entero-enterostomy, using Murphy's button. During the past year he has operated upon 11 caess with no deaths. In exploratory operations cocaine anesthesia might be much more frequently used.

DR. ARMSTRONG, of Montreal, considers many cases of gastric hemorrhage, such as capillary bleeding, amenable to medical treatment, but the severe hemorrhage which arises from deep ulceration generally requires operative treatment. Repeated hemorrhages of considerable amount also demand operative treatment. In operating, a large opening should be made near the middle of the anterior wall of the stomach to give plenty of room for exploration.

DR. L. M. TIFFANY, of Baltimore, called attention to the fact that by incising the gastrocolic omentum and passing the hand up behind the stomach, it is possible to turn the stomach practically inside out in examining the mucous membrane for ulcer.

THE METHODS OF CLOSING ABDOMINAL INCISIONS.

DR. M. H. RICHARDSON, of Boston, read this paper. He advocates through-and-through suture as quicker, more convenient, less likely to leave dead spaces which fill with blood and tend to produce infection, and he believes that there is no more tendency to hernia. After using various materials for suture he has adopted silkworm gut for closing the abdominal wall and silk for all other ligatures and sutures. It is questionable whether union is any more secure after suturing like tissues than if peritoneum be sutured to fascia, and fascia to muscles. The number of hernias through the scars of abdominal incisions is insignificant. In five years only nine such cases have come to the Massachusetts General Hospital, though over 1,500 abdominal operations have been performed. In some cases interrupted

buried sutures of the fascia may be inserted with advantage after through-and-through sutures have been first inserted before they are tightened and tied. It is well to first thread both ends of the suture with a needle, and the needles are then passed through the abdominal walls on each side from within outward.

DR. J. B. DEAVER, of Philadelphia, stated that he agreed with Richardson entirely. He confines his incisions to the muscular wall of the abdomen, preferably through the rectus muscle, not through the linea alba or linea semilunaris. He also uses silkworm gut and silk as suture material; never catgut.

DR. WEIR, of New York, believes that there is good in both methods. He uses the layer suture. The suture should not be drawn too tight so as to strangle the tissue and interfere with repair. He thinks that the percentage of ventral hernias is greater than estimated by some previous speakers.

DR. G. R. FOWLER, of Brooklyn, thought that when experts disagree on matters in which they have had wide experience, the middle course is usually the safest. Fowler uses what he calls the crossed suture, a kind of double figure of eight, which crosses twice in the tissues. The suture is easily inserted, easily removed and efficient. The skin ends are farther apart from the edge of the incision, and they are passed through a bolster of thick rubber tubing.

DR. COLEY, of New York, favors the layer suture, and has used catgut for the buried suture material for nine years. Out of 150 hernia operations since he began using gloves he has had but one infection, and that could be traced to imperfect sterilization of the skin. He has seen many sinuses resulting from the use of silk.

DR. S. J. MIXTER, of Boston, does not use either method exclusively. There are great differences in the way in which sutures are inserted. If through-and-through sutures are used the different layers should be picked up with care and they should not be drawn too tightly.

DR. GEORGE B. JOHNSON, of Richmond, Va., after extensive trial of both methods prefers through-and-through suture, as it destroys dead spaces and does not leave weak places in the abdominal wall.

DR. NANCREDE, of Ann Arbor, Mich.: The man who uses one method acquires dexterity with it, and can use it with better advantage. By repeated experiment it has been proven that catgut can be reliably sterilized by boiling in cumol, and if germs are found on the ends of it they are the same as those on the operator's hands.

DR. CARSON, of St. Louis, prefers catgut as a suture material.

DR. RANSOHOFF, of Cincinnati, uses continuous sutures in layers and fastens by the use of perforated shot.

DR. RICHARDSON stated that his objection to catgut is not that it cannot be sterilized but it does not tie well and is not permanent enough. Silk never gives trouble in aseptic wounds.

STRANGULATED HERNIA THROUGH A TRAUMATIC RUPTURE OF THE DIAPHRAGM; LAPAROTOMY; RECOVERY.

DR. E. W. WALKER, of Cincinnati, read this paper. A man of twenty-nine was struck by a falling tree and was only prevented from being completely crushed by one of the branches. Pain in the chest, nausea and vomiting, constipation and extreme shock resulted. After a time the vomiting became stercoraceous. The bowel was pulled down, relieving the obstruction, and an attempt was made to suture the diaphhragm. Rapid recovery followed and the patient has been in good condition since the injury.

DR. S. J. MIXTER, of Boston, reported a case in which a man was taken with severe pain near the umbilicus while pumping a hand-engine. On opening the abdomen it was found that the intestines were protruded into the thoracic cavity through a rent in the diaphragm. The thoracic and peritoneal cavities were both contaminated with feces and death followed a short time later.

DR. R. MATAS, of New Orleans, considers the transpleural route most favorable in such cases; this is the opinion of Italian surgeons who have had most experience in these operations following stab wounds.

A CASE OF SUBPUBIC HERNIA OF THE BLADDER THROUGH THE PELVIC FLOOR; OPERATION.

DR. F. B. HARRINGTON, of Boston, reported this case. A woman of forty-six, who had a large tumor of the labium majus, was taken suddenly with retention of urine. Several years previously she had been operated upon for a large edematous fibroid of this region; the fibroid had recurred and pulled down the bladder. Catheterization reduced the size of the tumor considerably, but all efforts at reduction were unavailing. Operation was performed, reducing the hernia, and recovery followed.

DR. W. W. KEEN, of Philadelphia, read a paper entitled

EXTIRPATION OF A VERY LARGE ANEURISM OF THE RENAL ARTERY.

DR. M. H. RICHARDSON, of Boston, read a paper on

A CASE OF ACUTE TUBERCULOSIS OF THE MESENTERIC GLANDS OF THE ILEOCECAL COIL; REMOVAL; PERMANENT RECOVERY.

DR. DE FOREST WILLARD, of Philadelphia, read a paper entitled

CONGENITAL CYSTIC TUMOR OF THE PELVIS.

A neurotic man had for several years had severe pain extending down his leg, and his physicians had made a diagnosis of neuritis. The pain did not follow the course of any nerve and it was not continuous. Later on a tumor appeared in the region of the groin. Various diagnoses were made, including malignant disease of the inguinal glands or of the ileum. On operating it was found that the tumor came out of the pelvis, passing over Poupart's ligament and forming a sausage-shaped mass in the groin. Hundreds of yellowish bodies, somewhat bean-shaped, were removed; they were laminated and in color resembled fat. The cyst which contained them was so intimately connected with the iliac and femoral arteries that it was impossible to remove it, and the cavity was packed with gauze. The specimen was examined by a number of competent pathologists, but as yet none of them have been willing to express an opinion as to the character of the growth. The patient died a short time later from nephritis, from which he had been suffering for some time.

DR. LEONARD FREEMAN, of Denver, read a paper entitled

UNION FOLLOWING PATHOLOGICAL FRACTURE OF THE FEMUR DUE TO SECONDARY CARCINOMA; SPONTANEOUS DISAPPEARANCE OF CARCINOMA OF THE LIP.

A woman of thirty-five, who had had a hard carcinomatous nodule of the breast removed some time previously, fractured her femur while turning in bed. Extension apparatus was applied, although union was not expected. After four weeks it was found that firm union had resulted. Microscopic examination of a specimen removed after the woman's death showed it to be carcinoma, which had invaded the bone through the Haversian canals. In a second case, a man had had an apparently typical epithelioma of the lip which disappeared. Later the submaxillary glands became enlarged and were removed. Microscopic examination showed the growth to be carcinomatous.

The following officers were elected for the ensuing year: President, Roswell Park, of Buffalo; First Vice-President, John E. Owens, of Chicago; Second Vice-President, Clayton Parkhill, of Denver; Secretary, Herbert L. Burrell, of Boston; Treasurer, G. R. Fowler, of Brooklyn; Recorder, De Forest Willard, of Philadelphia; Member of the Council, Robert F. Weir, of New York; Members on Committee of Arrangements, W. S. Halsted, of Baltimore, and W. J. Mayo, of Rochester, Minn. Next annual meeting to be held in Baltimore, May 7, 8 and 9, 1901.

Recent Literature.

The Irrigation Treatment of Gonorrhea, its Local Complications and Sequelæ. By FERD C VALENTINE, M.D. Profusely illustrated. New York: William Wood & Co.

This book of 212 pages and a carefully prepared index, is written for the instruction of the general practitioner of medicine, by a man whose knowledge of and experience in the treatment of gonorrhea make his opinions of value. The ground covered by the author is considerably greater than the title of the book indicates, for the subjects of acute and chronic gonorrhea are considered at some length and always from a most practical point of view. The irrigation treatment, with which the author's name is so prominently associated, is, as one would expect, given great prominence in the consideration of various methods of treatment, and it is described with the greatest care and attention to the smallest details. Short chapters on The Proofs of Cure of Gonorrhea, and The Marriage of Gonorrheics bring to an end a most concise summary of the present-day knowledge of the disease. If one had a criticism to offer it would be that certain methods of treatment, notably treatment by the aid of urethroscopy, are so simply and practically described as to unduly encourage their use by men of inadequate skill and experience. The book is attractively printed and the illustrations are numerous and adequate.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, JUNE 7, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.

THE TWENTY-EIGHTH ANNUAL REPORT OF THE LOCAL GOVERNMENT BOARD OF ENGLAND (1898-99); SUPPLEMENT. REPORT OF THE MEDICAL OFFICER.

THIS report embraces the operations of the Medical Department of the Local Government Board of England (practically the general Board of Health) and contains much matter of interest to physicians and to sanitary authorities.

The report contains the latest digest of the vaccination returns of England, those of 1896, which shows that out of 914,205 births registered in that year, after deducting those who had died during the year, and others whose vaccination had been postponed by medical certificate, there still remained 25.6 per cent. who were unaccounted for. The percentage in London unaccounted for was 26.4 and that of the rest of England was 22.3. These percentages were larger than those of any previous year since records were begun in 1872, having increased from 8.8 per cent. in London to 26.4 per cent., and from 4.5 per cent. in the rest of England to 22.3 per cent. The report further states that 110,728 consecutive primary vaccinations had been performed under the Board's auspices, *without the occurrence of a single case of so-called insusceptibility.*

Under the amended vaccination acts of 1898, the Board was authorized to offer to vaccinate "with glycerinated calf lymph, or such other lymph as may be issued by the Board." The Board, therefore, established laboratories for the production of such lymph, appointing Dr. Frank R. Blaxall as bacteriologist with several assistants. The demand for this lymph proved to be in excess of the supply, the number of tubes issued in the first three months of 1899 being 126,-038.

The operations of this establishment summarized were as follows: (1) The selection of healthy calves from three to six months old; (2) their supervision as to healthfulness; (3) vaccination of the calves and subsequent collection of the lymph at the animal vaccine establishment; (4) preparation of the glycerinated

emulsion; (5) testing of the emulsion by culture and otherwise to ensure its freedom from harmful organisms; (6) transference of the emulsion to capillary tubes; (7) compilation of the records received from public vaccinators. Each calf is slaughtered under supervision of a qualified veterinary surgeon. No lymph is sent out till a certificate has been received to the effect that the animal was healthy. In the first three months only one calf was found to be diseased, some tubercular lesions being found. None of the lymph of this animal was issued, although careful investigation failed to reveal any tubercle bacilli in it.

Several of the valuable appendices to the report contain the statements of medical inspectors relative to local inspections, hospital accommodation, sewage disposal, water supply, and the housing of the working classes.

The inspection of an unusual outbreak of measles at Burton-on-Trent, by Dr. Theodore Thomson, gave rise to the following comments of the Board:

"In order to successfully control measles in a borough of this description, where children suffering from the early stages of and incubating that disease are constantly liable to come into contact, the measures that are most likely to avail are isolation in hospital of the children first attacked, and the strict exclusion from school of all children living in houses where the disease prevails, to be followed, if need be, by actual closure of the schools. To attain the desired end with the least interference with the system of elementary education, it is as necessary for the school officials daily to seek the required information from their scholars and to transmit it to the sanitary officers as it is for the sanitary officers to transmit to the school officials information gained from the notification returns. And, above all, the time when these measures have most chance of success is at the very onset of the outbreak. Indeed, not only can no sanitary authority be expected to maintain in readiness means of isolation for more than a limited number of cases of measles, but the value of hospital isolation for preventing the extension of this disease is generally limited to quite the initial period of an outbreak."

A considerable part of the volume is occupied with reports of inspection of distant parts of the British Empire invaded by the plague and of the measures taken to prevent its entrance into England. These measures are summarized by the Board as follows:

"Briefly stated, the system adopted in this country in such cases is the medical examination of all persons on board; the removal to hospital of any person either suffering from plague or suspected to be so suffering; the disinfection of articles believed to have had opportunity of becoming infected, and of those portions of the vessel occupied by the sick; the registering on board of the names and addresses of all the remaining persons, including the crew, such persons being then free to leave the ship and to go to the addresses given; and lastly, the transmission to the sanitary authorities of the names and places of residence of persons leaving the vessel for their respective districts, with a view to such persons being maintained under supervision of the medical officer of health during the ten days which have been determined on as representing, in so far as administrative purposes are concerned, the period of incubation of plague. The system embodied in these measures is that which England has now for a long period adopted with regard to exotic diseases; it aims at arresting at our ports actual cases of foreign disease, plague, cholera and yellow fever, and of securing the disinfection of articles which may reasonably be held to have incurred risk of infection. For the rest it imposes no restrictions on either individuals or articles imported; but it relies on the internal sanitary administration of the country to control at the onset any infection which may perchance evade the precautions adopted at our ports. Thus far it has been singularly successful, as regards all the three diseases to which it has been applied, and the responsibility which devolves under it on local sanitary authorities so to organize their local public health departments that they shall be always prepared effectually to deal with any chance infection which may reach them from abroad has had the inestimable advantage of helping to secure at the same time a standard of health at home which has resulted in an immense saving of life."

With reference to the part played by merchandise in the transmission of infection, the Board continues as follows: "Some nations and persons have, in sheer panic, attempted to impose almost universal prohibition on the importation of all articles from countries where plague prevails; and in their most pronounced form these attempts have, in so far as the interests of this country are concerned, culminated in occasional suggestions to prohibit the export of grain from plague-infected ports, or to destroy cargoes of grain, such as corn and rice, when carried by a vessel on which one or more cases of plague have occurred. With regard to such proposals, I have taken the responsibility of advising that no prohibition either as to exportation or importation, under the circumstances referred to, was called for; and further, that no futile attempts at the disinfection of cargoes such as those of grain were justfiable, except in so far as the local medical officer of health had evidence that any individual sack or sacks of grain had had opportunity of becoming infected, or afforded indication of having been soiled by, or of having been eaten into by rats whose dead bodies gave evidence of the occurrence of the disease in them. Thus far, my action, which has often been followed by the use for food of the cargoes concerned, has been fully justified by the results.

In taking this attitude as regards the importation and exportation of articles of commerce in general, I have been influenced by the following considerations: *Firstly*, as regards grain cargoes, there is an absence of anything that can be regarded as evidence to show that plague is communicable to man by means of an article of diet, and there is, further, evidence

which goes to show that even when grain is purposely infected with the plague bacillus, that organism dies in a few days when the grain is dry, as when packed for transit. *Secondly*, there is overwhelming evidence to the effect that cargoes from infected vessels have failed to communicate the infection of plague, even under circumstances when nearly every condition present seemed to favor such communication."

He further cites the fact that in 1835 plague prevailed as an epidemic among the employés of every grade who were engaged in the warehouses of the Egyptian Government. Notwithstanding this, bales of cotton handled by these laborers were transmitted to the principal ports of Europe to the number of nearly 100,000 bales, without a single case of plague resulting. No precautions whatever were taken by way of disinfection.

"Having regard," the medical officer continues, "to our present knowledge concerning the etiology of bubonic plague, I feel justified in holding the view that, in so far as danger of the introduction of that disease into this country is concerned, the first and most important point to be held in view in our port sanitary administration is such strict medical inspection of persons arriving from infected countries as shall go to secure the detection and immediate isolation of those mild attacks which are mainly identified with slight or indolent bubonic enlargements and indications of general malaise. Next to this, and always to be observed, is the disinfection of all articles of clothing, etc., which have had opportunity of becoming infected, either before they were packed for the journey or since. *Thirdly*, comes the disinfection of those portions of the vessel which may have been used by patients suffering from or suspected to have had the plague. And, lastly, measures should be adopted to prevent the conveyance of the disease to the shore from an infected ship by means of rats, which are peculiarly susceptible to the plague infection.

"But no system of inspection or other restriction is perfect, and hence, for the rest, we must trust to such local sanitary administration of our towns, villages and hamlets as will deprive a disease such as plague of the means of diffusing itself should a chance case make its way inland."

HOSPITAL STATISTICS.

WE have from time to time taken occasion to allude to and criticise the disease statistics commonly published in hospital reports. Statistics at best are proverbially fallacious, and it is clear to one reading over the lists of diseases as they occur in the various departments of a large hospital and are finally published in the hospital reports that the standard of classification is usually wholly vague, that no proper distinction is made between disease processes and prominent symptoms, and that diseases are not, as a rule, properly grouped. The result of this is the narration of a series of conditions which lack statistical value because of the arbitrary and fortuitous way in which they are classified. It must, however, be recognized and admitted that owing to the fact that many so-called diseases are known only by their prominent symptom, and that our knowledge is on many sides incomplete, a scientific classification is a matter of great difficulty. The question at once arises, for instance, as to whether we shall classify by etiology or by pathological anatomy or by symptomatology. If we look over a hospital report we usually find that no one of these methods is exclusively used. We speak now of tuberculosis and not of phthisis, of nephritis rather than Bright's disease, of appendicitis rather than of the various inflammatory affections of that region which used to confuse the nomenclature. As our knowledge advances on the etiological and pathological side we are able to classify with more and more accuracy. There is, however, a great field where no such accurate knowledge exists, and then we fall into the error of classifying merely by symptoms, and giving to certain symptoms, for example, hemorrhage, hemiplegia, vertigo, a significance which in no way belongs to them. The inevitable result is a confusion and repetition under different names, which does little toward making statistics of value.

The faults, therefore, which we find in hospital case statistics are inherent in the nature of the subject and are certainly not peculiar to any one institution. In editorial comment on the last report of the Boston City Hospital we said in part, in our issue of September 21, 1899: "In the report before us, we find in one place apoplexy, cerebral hemorrhage and hemiplegia classed as separate diseases; in another we see multiple sclerosis and disseminated sclerosis given as distinct from one another. Under unclassified gynecological diseases are named the following conditions: Bursitis, caries of vesicle, debility, hepatic colic, infancy. Under surgical diseases, among many others equally extraordinary, are apoplexy, hysteria, delirium tremens, premature birth, general paralysis. Since so much work is necessarily put upon this portion of hospital reports in general, it is unfortunate that a classification is not agreed upon by the various departments, that some sort of order may be brought out of the chaos, and such statistics rendered really serviceable. We simply take this report as an example of an almost universal failing."

In a more recent review of the last Massachusetts General Hospital report, we said in speaking of the disease statistics: "The diseases are not carefully tabulated and are of small value as statistics or for purposes of reference. Dementia, neurasthenia and hysteria, for example, are classified as surgical diseases, as is also miscarriage. As we have before had occasion to say, such statistics are worthless unless prepared with scrupulous care. The difficulty seems inherent in the system, and is by no means peculiar to the Massachusetts Hospital." Certain persons have felt that some of the foregoing assertions are unjust,

that such statistics are not useless, and that the tabulation is far better than we were inclined to allow. That they have a certain interest to those wishing to get a general outline of the amount of work done at a hospital we are quite willing to admit, but we are equally sure that it is unjustifiable to regard any statistics of value, as statistics, which do not strictly conform to some fixed standard of classification. A reform of some sort is definitely needed, and as a suggestion we should say that the value of such tabulations will be in proportion to the simplicity of the classification. In the second place, it is highly desirable that a somewhat uniform system be adopted in our large institutions, to the end that comparisons of accuracy may be made. The over-refinement of detail which is so conspicuous a feature of the ordinary tables should be abolished to give place to a rational system which will at least have the merit of being logical and correct as far as it goes. We find precisely the opposite tendency in the long-drawn-out narration of minor symptoms, masquerading as diseases, which have no claim to be regarded as disease processes and which can fill no logical place in a rational system of classification designed to be of statistical value. We plead merely for a simple and logical method of tabulation based on what knowledge we have of disease. If this could be done, this portion of the conventional hospital report would be converted to a useful end.

MEDICAL NOTES.

AMERICAN NURSES IN PARIS. — Physicians having patients who are to visit Paris this summer may be interested to know that a number of American graduate nurses may be obtained in that city. They are graduates of St. Luke's and the Presbyterian Hospitals of New York, and are women of experience and character. They are under the charge of Mrs. Emma Keith Borth, 102 Rue Vangirard, who refers to some of the most prominent physicians of New York.

RECEPTION BY THE MEDICAL CLUB OF PHILADELPHIA. — The Medical Club of Philadelphia will hold a reception at the Hotel Bellevue on Saturday evening, June 9th, in honor of Drs. Abraham Jacobi, of New York, Alonzo Garcelon, of Maine, George H. Simmons, Secretary of the American Medical Association, James Morrison Bodine, of Louisville, Frank Billings, of Chicago, and the President-elect of the American Medical Association.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, June 6, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 80, scarlatina 54, measles 91, typhoid fever 21.

NEW YORK.

"EFFECT OF SUMMER HEAT UPON THE PUBLIC HEALTH." — On May 28th, Dr. Henry D. Chapin read a paper on "The Effect of Summer Heat upon the Public Health." In the course of it he remarked, "It is estimated that there are 146,600 children under the age of three years now living in the Boroughs of Manhattan and the Bronx. This immense number subsists principally upon milk. Recent studies show that if cow's milk can be properly cooled, it will keep a considerable time, and this is much better than relying too largely upon superheating. Here is where the subject of ice comes properly under the physician's notice. Any difficulty in the free procuring of ice by the poor during the heated months, whether from a natural scarcity of that article or from a cornering of it by commercial greed, is a public calamity." In the discussion of the paper Dr. A. Jacobi also attacked the ice trust, saying, "Commercial enterprise should not be disturbed, but when it goes to the length of destroying life, some check ought to be put to it. We punish men for erecting bad buildings, and when a wall tumbles down and kills a person a great hue and cry is raised, and new and more stringent laws are made. When commercial enterprise is sure to kill thousands of children and adults, should it not be interfered with? Physicians should certainly take a lively interest in this matter."

A DEATH FROM SCALDING AT AN INSANE HOSPITAL. — Kate Donnelly, a patient in the female department of the Manhattan State Hospital for the Insane on Ward's Island, was recently scalded to death by another patient, Mary Brennan. It seems that two of the attendants carried the former to a bathroom and placed her in the tub, and while they were bending over the tub the Brennan woman, who has a mania for playing with water, entered and turned on the hot-water faucet. To preclude the possibility of patients handling the faucets themselves while bathing, the water is turned on and off by an arrangement several feet distant from the tub, and it was thus that the precaution taken to guard the patient proved the very means of disaster in this case. The instant that the hot water was turned on one of the attendants started to turn off the faucet and the other to secure the Brennan woman, but in the meanwhile the helpless patient in the tub was so severely scalded that the injuries resulted in death. The two attendants, who were students in the junior class of the Training School for Nurses, have since been discharged.

BASKET BALL AMONG THE INSANE. — At the women's games on the grounds of the Manhattan State Hospital for the Insane at Ward's Island on Memorial Day, which were refereed by Dr. Archibald Campbell, a spirited basket-ball match was played by a team of "chronics," dressed in brown, and one of "acutes," in blue. Over eight hundred patients, seated on two sides of the lawn, watched the contest with intense interest.

MEETING OF NATIONAL VOLUNTEER EMERGENCY SERVICE MEDICAL CORPS. — The first meeting of the founders of the "National Volunteer Emergency

Service Medical Corps," was held on June 2d. The purposes and plan of organization of this new body, the design of which is to provide prompt and efficient medical or surgical service, with skilled nursing, in case of sudden war, riots, epidemics or public disasters of any kind, are to be fully explained by its originator, Dr. J. Adelphi Gottlieb, of New York, in a paper before the Section on State Medicine of the American Medical Association at the Atlantic City meeting.

RECREATION PIERS. — The six recreation piers of Manhattan, three on the Hudson and three on the East River, were thrown open for the season on May 26th, and on May 28th a new one on the East River, in front of Williamsburgh, Borough of Brooklyn, was opened with appropriate ceremonies. On June 1st the new Hamilton Fish Park, a small East-Side park on Houston Street, was opened in the presence of nearly ten thousand children of the tenements. It contains an ample playground, a gymnasium, a bathing-house, and two fountains.

A CENTENARIAN. — Mrs. Hannah Kennedy died at her home on Columbus Avenue on June 1st, at the age of one hundred and one years. She was born in Ireland and came to this country after the death of her husband, thirty-seven years ago She leaves six children, seventeen grandchildren and five great-grandchildren.

Miscellany.

MEETING OF THE ASSOCIATION OF MILITARY SURGEONS.

THE ninth annual meeting of the Association of Military Surgeons of the United States was held at the New York Academy of Medicine on May 31st and June 1st and 2d, with Col. Charles H. Alden, Assistant Surgeon, U. S. A., presiding. The following officers were elected for the ensuing year: President, Brig.-Gen. A. J. Stone, Minnesota; First Vice-President, Medical Inspector John C. Wise, Washington, D. C.; Second Vice-President, Brig.-Gen. J. F. Calef, Connecticut; Secretary, Lieut.-Col. Charles Adams, Illinois; Treasurer, Lieut. Herbert A. Arnold, Pennsylvania. In his annual address, the President stated that over one hundred and fifty members of the Association, nearly one-half its active membership, were selected for commissions in the United States or volunteer services during the Spanish-American War. This war, he said, has already had the effect of attracting attention to the need of our National Guard and the importance of a more intimate union between the United States and the State military forces. The present Congress, he believed, would provide more liberally than formerly for the needs of the State military, and further steps would probably soon be taken to unify the military resources of the nation. At the conclusion of the address a committee was appointed to take steps towards the establishment of a military medical journal. It consisted of the following members: Drs. A. J. Stone, Charles Adams, W. C. Borden, C. P. Wertenbaker and John C. Wise. Colonel Griffith then announced that the gold medal offered by Dr. Eno Sander, of St. Louis, for the best essay on "Military Surgery," had been won by Capt. W. C. Borden, Assistant Surgeon, U. S. A., Washington, D. C.

In a paper on "What Should be the Standard of Vision Required of Enlisted Men in the United States Army?" Dr. Myles Standish called attention to the fact that in European countries enlisted men are permitted to wear glasses, while they are not in the United States. In a great many instances he thought an injustice was done to applicants for admission both to the army and to West Point, who were rejected without adequate reason. In a paper on "Field Work in the Philippines," Dr. F. W. Kemp stated that, in his experience, nine-tenths of the deaths on the field of battle were the result of wounds which are not necessarily fatal if the flow of blood is stopped at once. For this reason he regarded the first-aid packet as of incalculable value, and he urged a thorough instruction of officers and men in first aid. He also advocated the employment of Chinamen as litter-bearers, instead of Americans, in tropical countries; stating that he had used them for this purpose in the Philippines, and had found them absolutely tireless and totally without fear under fire. In a paper on "The Utilization of Native Troops in Colonial Possessions," Dr. L. L. Seaman also advocated the use of the Chinese. Among their recommendations as soldiers were, first, their temperance, and, second, their cheapness. The Chinese soldiers cost Great Britain about five dollars in gold per month, this amount including both pay and rations. In the Philippines, he said, there are at present twenty-five regiments of volunteers whose term of service expires in June, 1901, and he recommended that as the ranks of these regiments become depleted the battalions be reformed so that there will be in each regiment two battalions of Americans and one battalion of Chinese or Filipinos, the full complement of American officers being retained. Among the other papers read and discussed were the following: "The Value of the Schumburg Method of Purification of Water for Military Purposes," by Dr. J. H. Huddleston, of New York; "Method of Transportation of Wounded on Ships of War," by Dr. John C. Wise, U. S. N.; and "The Management of Quarantinable Diseases and Cordons," by Dr. C. P. Wertenbaker, of the U. S. Marine-Hospital Service. The annual dinner of the Association was held at the Murray Hill Hotel on the evening of June 1st.

DEATH CERTIFICATES IN RURAL DISTRICTS.

THE town clerks in the rural districts of the State of Massachusetts are undoubtedly not responsible for all the statements as to the cause of death which they annually publish in the reports of their respective bailiwicks. Bad spelling and bad chirography are not confined to prescription writing. Certificates of death come in for their share, and when State documents continue to be crammed with errors it is hardly reasonable to expect more of town reports.

The following curiosities are to be found in the reports of a dozen town officials in their reports of 1899, as causes of death: Intra menruged hemorrhage, athenma, focal impostin, cataubalis epidemicus, mul-

tiple garamati, embalesue, septic endocudtis, osteo myelitis of ilicium, puerferal eclamprice, intescrantal tumor, condylamotor, chronic cyndocarolitis, iliaculitis, hypithiticial suicide, spina befoilo.

Obituary.

E. O. SHAKESPEARE, M.D.

DR. E. O. SHAKESPEARE, of Philadelphia, died suddenly June 1st at the age of fifty-four. He studied medicine at the University of Pennsylvania and was graduated from that institution in 1869. He was later connected with the Medical Department of the University as assistant at the Eye Clinic and Lecturer on Operative Eye Surgery. He was also during his life, president of the Pathological Society of Philadelphia, pathological and ophthalmic surgeon to the Philadelphia Hospital, a member of the College of Physicians of Philadelphia, of the American Medical Association and was president of the Section of Pathology in the International Medical Congress.

In 1885 he was commissioned by President Cleveland to investigate Asiatic cholera in Europe and India, and he spent a year in that work. During the war with Spain, Dr. Shakespeare was appointed a brigade-surgeon, with the rank of major of volunteers, and at the time of his death he was acting as a member of the commission attached to the office of the Surgeon-General at Washington to investigate the causes of typhoid fever in the United States Army.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MAY 26, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Diphtheria and croup.	Measles.
New York	3,654,594	1288	403	24.88	18.00	1.20	3.60	1.76
Chicago	1,616,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	—	—	—	—	—	—	—
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	200	59	19.00	17.00	1.00	4.50	.50
Baltimore	506,389	162	42	15.25	12.81	1.83	.61	—
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	130	41	19.00	13.00	1.52	.76	—
Washington	277,000	71	20	5.64	9.87	—	2.82	—
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	66	17	13.59	6.04	3.02	1.51	—
Nashville	87,754	—	—	—	—	—	—	—
Charleston	65,165	32	12	18.78	3.13	15.65	—	—
Worcester	111,732	35	11	20.00	11.44	2.86	2.86	—
Fall River	103,142	37	27	8.10	22.60	—	2.70	—
Cambridge	102,520	17	4	17.64	11.76	5.88	—	—
Lowell	90,114	23	9	13.02	21.70	—	—	—
New Bedford	70,511	23	9	13.02	21.70	—	—	—
Lynn	68 218	20	—	10.00	10.00	—	—	—
Somerville	64,394	13	3	38.45	7.69	—	7.69	—
Lawrence	59,072	20	11	40.00	15.00	5.00	5.00	20.00
Springfield	58,266	20	6	10.00	25.00	—	—	—
Holyoke	44,510	16	6	25.00	25.00	12.50	—	—
Brockton	38,759	—	—	—	—	—	—	—
Salem	37,723	16	7	6.25	12.50	—	—	—
Malden	36,421	7	2	14.28	14.28	—	14.28	—
Chelsea	34,235	5	—	20.00	—	—	—	—
Haverhill	32,651	9	2	—	22 22	—	—	—
Gloucester	31,426	8	—	—	—	—	—	—
Fitchburg	30,523	5	2	20.00	20.00	—	—	—
Newton	30,461	8	4	37.00	—	—	—	—
Taunton	28,527	13	2	7.69	—	—	—	—
Everett	28,102	7	1	—	—	—	—	—
Quincy	24,578	4	2	—	50.00	—	—	—
Pittsfield	23,421	—	—	—	—	—	—	—
Waltham	22,791	6	2	33 33	16 66	—	33 33	—
North Adams	21,583	3	—	—	—	—	—	—
Chicopee	18,316	11	3	9.09	9 09	—	—	—
Medford	17,190	6	2	16.66	—	—	—	—
Newburyport	15,636	3	—	—	33.33	—	—	—
Melrose	14,721	5	1	60.00	—	—	20.00	—

Deaths reported 2,302; under five years of age 712; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 471, acute lung diseases 263, consumption 254, diphtheria and croup 68, diarrheal diseases 36, scarlet fever 16, whooping-cough 20, cerebrospinal meningitis 17, typhoid fever 13, erysipelas 13.

From whooping-cough New York 14, Baltimore, Providence, Charleston, Springfield, Holyoke and Salem 1 each. From cerebrospinal meningitis New York 7, Baltimore and Lynn 2 each, Boston, Washington, Worcester, New Bedford, Somerville and Chicopee 1 each. From scarlet fever New York 10, Boston 3, Pittsburg 2, Newton 1. From typhoid fever New York 6, Pittsburg 2, Boston, Baltimore, Washington, Providence and Newton 1 each. From erysipelas New York 11, Baltimore and Medford 1 each.

METEOROLOGICAL RECORD

For the week ending May 26th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.		Relative humidity.		Direction of wind.		Velocity of wind.		We'th'r. *		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S...20	29.63	52	58	45	72	63	68	N.W.	N.W.	13	9	O.	C.	.03
M..21	29.72	56	66	46	60	81	70	W.	W.	5	6	C.	C.	.11
T...22	29.83	58	72	45	58	39	48	N.W.	N.	19	5	C.	C.	
W..23	29.95	60	67	52	56	63	60	N.W.	W.	6	2	F.	C.	
T...24	30.01	58	65	50	71	87	79	E.	N.E.	6	13	O.	O.	
F...25	29.83	56	68	48	74	56	65	N.E.	N.E.	22	12	O.	F.	
S...26	30.23	52	60	45	48	64	56	N.E.	E.	9	5	F.	O.	
☞														

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatenings; N., snow. † Indicates trace of rainfall. ☞ Mean for week.

SOCIETY NOTICE.

MASSACHUSETTS MEDICO-LEGAL SOCIETY.—The annual meeting will be held on Tuesday, June 12th, at 12 o'clock M., at the Medical Library, 19 Boylston Place, Boston.

The following papers will be read: "Autopsies and Physical Examinations," by District Attorney R. O. Harris.

"The Coroner System in the United States at the Close of the 19th Century," by Dr. S. W. Abbott.

The members of the medical profession are cordially invited.

JULIAN A. MEAD, M.D., *Secretary*.

RECENT DEATH.

WILLIAM HENRY O'HEARN, M.D., M.M S.S., died in Lawrence, June 4, 1900, aged thirty years.

BOOKS AND PAMPHLETS RECEIVED.

The Clinical Examination of Urine, with an Atlas of Urinary Deposits, including Forty-one Original Plates, mostly Colored. By Lindley Scott, M.A., M.D. Philadelphia: P. Blakiston's Son & Co. 1900.

A Text-Book of the Medical Treatment of Diseases and Symptoms. By Nestor Tirard, M.D. (Lond.), F.R.C.P. Adapted to the United States Pharmacopeia by E. Quin Thornton, M.D. Philadelphia: Lea Brothers & Co. 1900.

A Memoir and Works of Henry Jacob Bigelow, A.M., M.D., LL.D., Member of the Massachusetts Medical Society, Emeritus Professor of Surgery in Harvard University, etc., and Foreign Honorary Member of Clinical Society of London, etc.

Surgical Anesthesia; Addresses and other Papers. Orthopedic Surgery and other Medical Papers. I. The Mechanism of Dislocations and Fracture of the Hip. II. Litholapaxy; or, Rapid Lithotrity, with Evacuation. Boston: Little, Brown & Co. 1900.

Cholangiostomy: Two Cases Recovering. Case History and Photograph. Eleven Cases of Castration and their Histories. Ovarian Pregnancy: Report of a Case at Full Term. By B. Merrill Ricketts, Ph.B., M.D., Cincinnati, O. Reprints. 1899–1900.

Annual and Analytical Cyclopedia of Practical Medicine. By Charles E. de M. Sajous, M.D., and one hundred Associate Editors, assisted by Corresponding Editors, Collaborators and Correspondents. Illustrated. Vol. V. Philadelphia, New York and Chicago: F. A. Davis Co. 1900.

Address.

REALISM IN MEDICINE.[1]

BY A. T. CABOT, A.M., M.D., BOSTON,
Surgeon to the Massachusetts General Hospital.

Mr. President and Fellows of the Massachusetts Medical Society: — When I received the compliment of an invitation to address you to-day I first thought that here was an opportunity to present some surgical subject that would have a general interest. Before I had settled on a theme, however, I remembered that this was the year 1900, and I felt that it would be plainly unfitting, at our last meeting in the nineteenth century, to ask you to confine your thoughts to any narrow field of research. For we are just finishing the hundred years in which medicine and medical study have done more for the world than had been accomplished by the disciples of Esculapius in all previous time.

Wallace, in his recent book entitled "The Wonderful Century," draws a striking comparison between the achievements of human endeavor in the nineteenth century and in all preceding ages. He takes account of the discoveries which have been of sufficient weight to turn the current of thought or to profoundly modify the lives of men. In parallel columns he places these lists of notable events; on one side those which preceded the year 1800, and on the other those which followed it. Certainly he is justified in calling this a wonderful century, for twenty-four important discoveries are credited to it, while he has found but fifteen discoveries of similar magnitude in all past time.

However we may differ with Wallace in some of his estimates, we must agree, I think, that this comparison is substantially a fair one, and must recognize that, measured by such tests as we can apply, the world and the conditions of life upon it have been more altered by man in the past century than in all time that had gone before.

In no realm of human thought has this recent advance been more rapid than in that of medicine, and in none other has it been of such wide and lasting benefit to humanity.

When we name surgical anesthesia, cellular physiology and pathology, antiseptic surgery, and the germ theory of disease, we have an array of gifts for which the human race may well feel grateful to the medical men of the nineteenth century. Looking back through all past time, we find that in the seventeenth century Harvey discovered the circulation of the blood, and that in the eighteenth century Jenner introduced vaccination. Here the list of medical contributions of the first rank ends, four in the present, two in all past centuries. And of these two, vaccination, while working great good, did not admit of scientific explanation or understanding until the investigations arising out of the germ theory opened our eyes to the significance of acquired immunity.

It would be manifestly impossible in the time at our disposal to review in any detail the progress of medical science in the three generations just past, and I do not mean to task your patience with an attempt at such recital. But I think it may be well worth our while to take note of the discoveries which mark epochs in medical progress and which have occurred within the memory of many of those here present. A consideration of the direction of the research or study which led to them may help us to draw from them lessons, or deduce from them curves of thought which will guide us along the best lines in the century that we are just entering.

A brief consideration of the history of medicine shows that it may, for purposes of study, be divided into two periods. Of these the first is that long period from the birth of known time up to the beginning of this century, during which idealism prevailed and theory succeeded theory only to be in its turn superseded by some newer invention of a more ingenious thinker. The second period is that of realism, in which theories are not allowed to stand unless they can be shown to rest on demonstrable facts. It is not claimed that this, the inductive method, had not been used in medicine prior to the present century. Far from it, for the two already mentioned achievements of the past, namely, the discovery of the circulation of the blood and vaccination, were both obtained by men following realistic methods, searching for facts and basing their theories on these facts only after they had been thoroughly tested.

It can be fairly asserted, however, that it is only within the past hundred years that inductive reasoning has become the prevailing influence in medicine, and that abstract ideas have come to be discredited. Now and then, even in the remotest times, men who were born observers attained some insight into the realities of things. Such men often solved the practical difficulties that were presented to them in the best manner and introduced rational methods of treatment which did much to keep medicine out of disrepute during that long period when error masqueraded in the cloak of philosophy. The questions that were intelligently handled in those early times were mostly anatomical or surgical, and dealt with the visible or easily accessible parts of the body. The moment that obscure functions or the hidden causes of disease came under discussion, then the all-pervading idealism resumed its sway and the wildest speculation and theorizing prevailed.

Thus at the time when surgeons met the serious difficulties of an operation for stone in the bladder in a rational and enlightened manner, their medical brethren were treating pneumonia, typhoid fever and other diseases that taxed the endurance of their patients to the utmost, by bleeding and other methods of depletion, which still further reduced the strength so greatly needed.

It is true then of all time that medicine has owed its successes to its use of inductive methods. It has reached lasting results only when it has rested its theories on accurately observed facts. We recognize the human senses as being, on the whole, reliable observers, worthy of acceptance as witnesses to the facts.

No one would for a moment deny that our senses are fallible and often deceived; but they are the only witnesses we have and we must make the best of them. They must not be easily trusted and their observations must be constantly verified by independent investigations. This constant re-examination and verification or disproval of work done has been a marked feature of medical progress in this century.

Louis, the great clinician, who was active at the time when idealism was losing its hold and realism

[1] The Annual Discourse read before the Massachusetts Medical Society, June 13, 1900.

was coming to the front, said: "As often as I have formed an *a priori* idea and had afterward opportunity to prove the facts, I have invariably found that my idea was false." Here is the testimony of an honest man, striving after the truth and forced to recognize the fallibility of the human mind when acting without the constant control of the observant senses.

The present, consistent and ever advancing progress of medicine toward a solid and enduring position among the arts and sciences of the world dates from the time when medical men came to Louis's way of thinking, and ceasing to be content with the so-called systems of medicine which had their origin in the minds of ingenious closet naturalists, sought to establish a foundation of fact for the superstructure of their thought.

It was then that they ceased to be animists, vitalists, Brunonians or animal magnetists and began to be scientific investigators, searching after the truth with the best powers of observation that nature had put at their disposal.

They were no longer content with the pleasing and fleeting shows of the imagination, but when they found a fact which kept its integrity through all the tests that their ingenuity could apply, they duly prized it and put it by, to use when they could make it applicable. Such tested facts and the beliefs founded on them were kept under constant scrutiny, and if an improved method of investigation was discovered, the previously trusted facts were re-examined and rejected if found wanting.

The scientific spirit is one of skepticism, hard to convince and very annoying to the intuitive thinker. But the nineteenth century has shown us that this patient piling of fact upon fact builds up structures of an interest and beauty before which the wildest dream of the idealist pales and with a quality of durability which is in strong contrast to the ever changing beliefs of the past.

The history of surgery affords, perhaps, as good an illustration as is possible of the triumph of the materialistic, the modern scientific method over the old idealism.

Who can tell us better the aspirations and hopes which seemed justified under the old régime than Ambroise Paré? No one better represents the high ideals of the surgical art in the past than he. In 1575 he said: "God is my witness, and men are not ignorant of it, that I have labored more than forty years to throw light on the art of surgery and bring it to perfection. And in this labor I have striven so hard to attain my end that the ancients have nought wherein to excel us, save the discovery of first principles; and posterity will not be able to surpass us (be it said without malice or offence), save by some additions such as are easily made to things already discovered."

To-day this prophecy sounds ludicrously short-sighted; yet it remained true for almost three centuries and forecast with considerable accuracy the course of surgery up to the time of the scientific upheaval which realism brought about. Could Paré come back to earth at this time, what joy he would take in the triumphs of modern surgery, for he loved his art truly and disinterestedly, and he would freely forgive the manner in which his prophecy has been belied. Not the least part of his pleasure would be in finding that with all the extraordinary advances that surgeons have made, they still hold fast to the ligatures that he gave them for the control of hemorrhage. Paré was the great realist of that day. He delighted in close observation and dared to follow what he saw.

To trace a little in detail now the paths along which the modern advances have been made, we find that at the beginning of the century the human senses, while recognized as credible witnesses and depended upon in a measure for the investigation of truth, were found to lack the acuteness necessary for penetrating many of the secrets of nature; and human ingenuity began to be turned to efforts to assist the perceptions and to widen their scope.

The power of the eye had for a long time been increased by the use of lenses, and the wish to aid its penetration into the depths of the body led to the invention of the ophthalmoscope, the laryngoscope, the cystoscope and other combinations of mirrors and lenses which brought the various cavities of the body within the reach of direct observation. Efforts in this direction will not pause till man ceases to be an inquisitive animal. Every year sees improvement in all such methods of investigation and a consequent widening of our knowledge of the hollow organs. Finally, at the end of the century, the remarkable discovery of Röntgen has enabled the vision to penetrate and discover the secrets hid in solid tissues.

In the meantime, the sense of hearing was not neglected. Something was known of percussion in the seventeenth century and a rude auscultation of the borborygmi in the bowels had been practised before that; but the thorough and efficient use of these methods of diagnosis waited for Laennec, who, in the first half of this century, by his invention of the stethoscope, greatly aided the sense of hearing and opened the way for the modern practice of auscultation and percussion, which has reached such perfection that the relative positions of deeply lying organs can be accurately made out; and the lightest whisper in lung or artery is heard and understood.

Even the sense of touch has had its range of usefulness widened. For modern surgery affords so many opportunities for the correction of ideas gained through palpation that the accuracy of deductions drawn from what it is possible to feel has been greatly increased, and a modern abdominal or pelvic examination is as great an advance on the less assured methods of a century ago as are the modern means of locomotion over the old stage coach.

Extraordinary as have been these advances in the investigation of living conditions under the earnest and constant pressure of clinical workers, it is when we turn to regard what has been accomplished by the post-mortem study of tissues healthy and diseased that we approach that part of achievement in medicine which will make this century memorable.

Much had been done in the way of accurate observation of morbid conditions prior to the present century, but it was after the improved lenses of the modern microscope made possible the close study of the individual cells that medicine made the forward stride which placed it in the ranks of exact science. Many men contributed to this result; for with the awakening of interest in the objective study of medicine, the laboratories, where such existed, were thronged with eager investigators, and if the time served, many of these might be mentioned with honor and reverence, for they advanced nearly abreast into the newly opened regions of cellular pathology.

It is impossible, however, to speak of this movement without mentioning the name of Rudolph Virchow, who will ever be remembered as the one who stepped forward from the ranks and led this advance. I well remember my first impression of Virchow when I went to Berlin in 1876 to study in his laboratory. He was not at first sight an imposing figure, and one would not have picked him from a crowd as the foremost medical thinker of the time. Any sense of disappointment on this score was, however, soon dispelled when he was seen at work. If I had brought no other impression from my foreign study I should have felt amply rewarded by the opportunity of seeing that trained intellect, backed by unrivalled powers of observation, leading the way through the most complicated pathological problems and making that way so clear that we wondered we had not seen it for ourselves. His eye seemed to penetrate to the centre of the organ he was examining, and we students used to say it was as good as a No. 7 Hartnak objective. One might well feel that to have been associated with him was a liberal education in medicine.

The habit of verifying with the microscope appearances dimly seen with the naked eye, and studying out the cellular changes involved, laid the foundations of modern pathology. At the same time, the optical instrument makers were constantly improving the lenses and methods of illumination in the microscope, so that it was possible from year to year to get a more and more accurate idea of the cells and of the changes that occurred in them as the result of morbid processes. Embryology, too, threw much needed light on the life history of the cell and upon the characteristics of different tissues.

This patient work of investigation required for its proper prosecution institutions devoted to the scientific study of medical problems, and it also required adequate means for the support of the investigators. Such institutions and the necessary endowments hardly existed in this country until the last quarter of this century, so that the earlier American students who wished to be properly instructed in these higher methods of research were forced to go abroad to seek the opportunity. Especially in Germany, they found good laboratories and inspiring teachers, and they came back after their probation inoculated with the skeptical, investigating Teuton habit. Even if they were soon plugned in the everyday work of their profession, and found bnt little time for the further prosecution of purely scientific work, still this habit of inquiry and of constant scrutiny of conditions passing under their eyes clung to them, and was of the greatest service in their practice and in such study of their cases as they could make.

A man with his standard of work thus raised was no longer content with a name as the explanation of a set of symptoms, but felt driven to seek out and understand the morbid process which caused the observed phenomena, and, if possible, to learn the cause of that morbid process. He had thus ceased to be an empiric and had become a scientific practitioner of his art.

The arousing of this spirit throughout the medical world has been perhaps the best gift of this century to medicine. The establishment of the cellular histology and pathology marks one goal reached by this movement, which is pressing on with a still accelerating speed.

We now come to speak of the second great contribution which this scientific spirit has made to the century. I refer to the germ theory of disease. The manner in which this discovery was made and in which the facts thus far established have been reached is most encouraging, and awakens inspiring hope for the future. For it was not revealed by any flash of inspiration to a closet thinker, nor was it accidentally stumbled upon by an erratic investigator groping far ahead of his time. On the contrary, it came as the logical result of concerted human effort, stepping forward constantly from fact to fact. It was the most complete possible demonstration of the worth of this sort of study. There could be no more convincing proof of the value of laboratory work than this. When the cause of a disease is discovered by such investigation, and its authenticity is shown by its power to reproduce the same disease, we at once feel that we have here solid ground from which to start for further researches.

It was this achievement, perhaps, more than any other, that informed the world that at last medicine was ceasing to be merely an art, and was taking its place among the exact sciences.

We cannot speak of the germ theory without thinking of certain illustrious men. The names of Pasteur and of Lister will at once occur to you all. We must not forget, however, that long before Pasteur's discovery of the influence of micro-organisms in producing fermentations, important work had been done by Vogel, Davaine, Schulze, Chevreuil and many others. It remained for Pasteur to so illuminate the facts that thenceforward no one could doubt that the minute organisms associated with putrefaction and other fermentative changes were really the cause of those changes, and not an accidental accompaniment or result of them.

Lister was deeply impressed by these discoveries. It had long been observed that subcutaneous injuries were quick to heal and followed a usually afebrile course, in marked contrast to the suppurations and fevers that accompanied the healing of open wounds. He was at once struck by the important bearing that Pasteur's discovery had upon this hitherto unexplained fact, and conceived the idea that the putrefaction produced in animal fluids by the action of organisms might be responsible for the unfavorable course of healing in wounds exposed to the air. To test the correctness of this hypothesis he devised means of excluding organisms from wounds. The success of his efforts in this direction compelled the attention of surgeons, and led by rapid steps through antiseptic to the aseptic surgery of the present day.

The discovery of this application of the germ theory threw the door wide open for the surgeon to enter safely into the inner recesses of the body, and to interest himself in the functions and disturbances of organs that had before been as sealed books to him.

The triumphs of the new surgery might well fill a discourse. It is with difficulty that I turn away from so fascinating a subject. To one whose surgical activity began with the introduction of antiseptic principles and who has grown up with the growth of modern surgery, it might well be forgiven if he dilated somewhat upon the triumphs of this golden age in which the power wielded by the surgeon has so wonderfully grown year by year. We are constantly urged forward by the encouragement, Be bold; be

bold, and but rarely are checked by the admonition, Be not too bold.

I cannot, however, allow myself the pleasure of such a digression, but must be content to point out that all this splendid achievement is one step in the onward progress of medical science, and that we owe it to the patient, plodding work of investigation that had gone before.

The interest of every laboratory, and indeed almost every microscope, was now turned to the scrutiny of fluids and tissues, for the purpose of discovering the individual organisms which caused each disturbance. One after another the bacilli, streptococci and staphylococci were ferretted out and classified, and with the aid of solid gelatine media, they were presently obtained in pure cultures and their individual characteristics were made demonstrable.

It was now found that special organisms produced special diseases with such certainty that in cases of doubt the detection of the microbe involved in a morbid process at once settled the character of that process. Thus a malignant pustule could be at once distinguished from an ordinary furuncle or carbuncle and the appropriate treatment could be adopted early.

In the presence of such exact knowledge the nomenclature of disease improved, and instead of speaking of erysipelas, lymphangitis or cellulitis, it now became usual to say, a streptococcus infection of such and such an extent. We ceased to use the terms scrofula or consumption, but began to speak of tuberculosis of this or that organ, and to demand a demonstration of the correctness of our diagnosis by the recognition of the bacilli.

These well-known instances of our changed conceptions of familiar diseases are selected as illustrations of the fundamental alteration of our habits of thought wrought by these newly learned facts.

The next natural step in the investigation of the action of micro-organisms within the body was the study of the effects of these organisms on the tissues and of the provisions that nature made to resist their deleterious action and to limit their growth. Considerable progress has been made in this research.

It has been shown that the blood serum has a certain amount of destructive power and that the white blood cells are active in the attack upon them. It has also been found, in the case of certain germs, that their growth in the body produces a future immunity of greater or less duration, and in the case of the Klebs-Löffler bacillus this immunity has been traced to the blood serum, which acquires, under the influence of the organisms, a positively antidotal power.

The action of the antitoxic serum obtained from horses treated with the diphtheritic poison is so well known to you all that it would be both superfluous and tedious to dwell upon it here. It is, however, perhaps the high-water mark reached by this modern investigation of disease. To learn the ultimate cause of a disease and then, by a study of this cause, to obtain the knowledge which enables us to meet and vanquish the morbid elements after they have obtained a foothold in the body, is certainly an achievement to be proud of.

It is natural that other organisms should have been studied with the object of discovering similar antitoxins. Efforts in this direction with the tetanus bacillus have yielded results that are decidedly hopeful. And the organisms of relapsing fever, cholera, the plague and tuberculosis have also yielded sera which seem to have some power in either checking or protecting against the parent disease. These are results most encouraging in view of the comparatively short time during which investigations in this direction have been under way. Much, however, remains to be done.

I now wish to turn aside for a moment to speak of an achievement which has been of incalculable benefit to medicine and mankind, but which lay out of the line of the regular advance of scientific medicine and stands by itself as a gift made by empiricism. I allude to the discovery of surgical anesthesia. No consistent, experimental study preceded and led gradually up to the final triumph. To be sure, an unconsciousness which, if not too deep, could be recovered from had been produced by carbonic dioxide, and as early as the year 1800 it became known that nitrous oxide gas would produce a temporary unconsciousness to pain, but even this latter agent, which has since been shown to have some degree of efficiency, was at that time deemed so unsatisfactory that it attracted little attention.

At this time, when the world was unprepared for such good fortune, the knowledge of the anesthetic properties of sulphuric ether was given to Thomas G. Morton, a Boston dentist, who was without scientific training, but who was possessed of the idea that surgical anesthesia was possible and who, in his effort to compass it, was ready to take any hint that came to his ears as to an agent by which it might be obtained. His good luck led him to hear that sulphuric ether, when inhaled, produced a temporary unconsciousness. Knowing no more than this, ignorant of the possible dangers of the drug, he risked his reputation and future peace of mind by trying it. Had ether possessed dangerous qualities and caused the death of the first patient, or had that patient been so unfortunate as to die from asphyxia, a mishap that might well have happened with the then incomplete knowledge of proper methods of etherization, Morton would have probably gone to jail and later to a dishonored grave. He took those risks and Fortune smiled on the brave, albeit reckless, man. His was the venture and his is the honor.

Surgical anesthesia was thus discovered, as it were, by accident. It came as a revelation rather than as a result of consecutive steps leading to that goal.

It is interesting to notice, too, that it was revealed at the very time when experimentation upon animals was beginning to be necessary to medical research. It seems to have been pre-arranged that when man's development reached the point of needing to study the phenomena of life upon the living, then his intelligence should compass the relief of pain.

This discovery, as I have said, lay to one side of the line along which scientific medicine was advancing; but it has been of incalculable aid to that advance. How greatly the triumphs of aseptic surgery would have been curtailed if surgical anesthesia had not been attained. And in experimental medicine it has done far more than to alleviate the pain of necessary operations. Without it, many of the most important investigations would have been impossible. For the delicate dissections and manipulations necessary in physiological research could not have been made on animals conscious and struggling.

(To be continued.)

Original Articles.

CLOSING STATEMENT FOR THE REMONSTRANTS TO THE MASSACHUSETTS HOUSE BILL NO. 917, ENTITLED "AN ACT FOR THE FURTHER PREVENTION OF CRUELTY TO ANIMALS," BEFORE THE JOINT COMMITTEE ON PROBATE AND INSOLVENCY, MARCH 15, 1900.

BY HAROLD C. ERNST, A.M., M.D., BOSTON,
Professor of Bacteriology in the Harvard Medical School; President of the Boston Society of Medical Sciences.

MR. CHAIRMAN AND GENTLEMEN OF THE COMMITTEE: — We are glad to hear the counsel for the petitioners acknowledge this morning that all the experts are on our side in this matter, for that is, of course, where we think they are, and I have to say for myself that I need so much more time for the "summing up" for the remonstrants than the petitioners will take, for the reason that there seems to be so much more to say on our side of this question.

In beginning what I have to say for the remonstrants to the bill before you, I should like to present for your consideration the following extract from one of the clearest writers of the day.[1]

"The insidious growth of selfishness is a disease against which men should be most on their guard; but it is a grave though a common error to suppose that the unselfish instincts may be gratified without restraint. . ." (Page 41.) "The fatal vice of ill-considered benevolence is that it looks only to proximate and immediate results without considering either alternatives or distant and indirect consequences. A large and highly respectable form of benevolence is that connected with the animal world, and in England it is carried in some respects to a point which is unknown on the Continent. But what a strange form of compassion is that which long made it impossible to establish a Pasteur institution in England, obliging patients threatened with one of the most horrible diseases that can afflict mankind to go — as they are always ready to do — to Paris, in order to undergo a treatment which what is called the humane sentiment of Englishmen forbids them to receive at home! What a strange form of benevolence is that which, in a country where field sports are the habitual amusement of the higher ranks of society, denounces as criminal even the most carefully limited and supervised experiments on living animals, and would thus close the best hope of finding remedies for some of the worst forms of human suffering, the one sure method of testing the supposed remedies, which may be fatal or which may be of incalculable benefit to mankind![2] . . .

"It is melancholy to observe how often sensitive women, who object to field sports, and who denounce all experiments on living animals, will be found supporting with perfect callousness fashions that are leading to the wholesale destruction of some of the most beautiful species of birds, and are in some cases dependent upon acts of very aggravated cruelty."

That we are obliged to fight against exaggerated statements will, I think, be evident to you from this, which is taken from the *New England Antivivisection Society Monthly*, October, 1899: "What is vivisection, and what can I do to help the crusade against it? Answer: Vivisection is the mutilating, cutting and burning of living animals; they are dissected, roasted, boiled and skinned, when alive and in full possession of their faculties. Nerves are dissected out, laid bare and connected with the poles of a powerful battery from which currents of electricity are passed over these nerves; this probably causes the greatest agony of which sentient beings are capable. At the present time, the only way to attack this horrible crime is by printing and circulating information so as to let the public know just what vivisection is, and how much it is done.

"The New England Antivivisection Society has been organized and incorporated for this purpose. In order to accomplish its object it must have money to pay its office rent, and for printing and postage; every additional member increases its influence, apart from the income from membership. At present it has several hundred members, and it wants to have several thousand before the end of another month" (a hope evidently disappointed, for at the hearing the treasurer testified that the membership of this Society was "several hundred"); "every dollar given aids the work directly; all of its officers serve without pay, a thing that can be said of no other society of its kind in this State; annual membership is five dollars; associate membership is one dollar, which does not give the right to vote; life membership is one hundred dollars. The New England Antivivisection Society opposes vivisection, (1) because the number of animals vivisected, with unknown and inconceivable agony to each one, is probably several thousand each day; (2) because anesthetics are very seldom efficiently used; (3) because the results of vivisection are as near to absolute worthlessness as it is easy to get, in fact cause great and absolute harm; (4) because, as recent revelations in the *Transcript* and other papers abundantly show, vivisectors of prominence and supposed character are, almost without exception, untruthful, and cannot be relied upon to speak the truth about their own acts," and so on.

These statements are so positive, and if true would be so overwhelming, that it is hardly conceivable that they would have been put forth with no better evidence to support them than has been offered here, and of this evidence and by whom given I shall speak later.

At the outset it should be stated that vivisection includes *not* merely the dissection of anesthetized animals, but all the great series of inoculation experiments that have been mentioned to you — those made for purposes of diagnosis, for the preparation of toxins and antitoxins of various kinds, as well as for the purpose of securing further light on our knowledge of the causation of disease. As an illustration, it may be said that the passage of such a bill as is before you would prevent all studies upon bubonic plague, which is now threatening our shores.

To show that we are here voicing the sentiment of the medical and scientific workers of the country, as well as those of this State, I beg to present the following votes of the most important scientific bodies of the country.[3] There are sixty-nine such societies here represented, and others have voted since that time, as did these, in opposition to the restrictive legislation such as is here proposed.

[1] Lecky, W. E. H.: The Map of Life, 1899, pp. 36 and 41.
[2] See also Seton-Thompson in the current Century Magazine.
[3] Senate Document No. 31, 54th Congress, Second Session.

I am indebted for much of the next following legal statement to the report of the hearing held before the Legislature on this same subject four years ago:

"There are probably three things, Mr. Chairman, in regard to which you and your Committee wish to be satisfied: Whether vivisection is useful, productive of valuable results; whether there are abuses within this State which you ought to regulate; whether there is such secrecy in the practice of it that you cannot find out whether there are abuses or not. As to its usefulness, that is a matter of expert opinion. The medical profession is a very large one and contains men of all sorts of training and all sorts of opinions. It is possible to select, as the proposers of this bill have done, certain names of physicians who are opposed to vivisection — or who *were* opposed to it, for it is noticeable that almost all the opinions quoted are old opinions, not based on facts which correspond with the practice of vivisection as it exists to-day. Speaking generally, however, it is possible to say that the great consensus of medical opinion — trustworthy, authoritative opinion throughout the world — is in favor of vivisection, as productive of the very highest good, and as being actually indispensable to the progress of medicine. A few years ago, this question was submitted by the Government of Germany, through the Minister of Public Instruction at Berlin, to the universities. Among other questions asked was: Whether the Faculty considered vivisection an indispensable method of research, which medical science could not possibly give up without positive damage to itself. The University of Berlin, among others, answered the questions, and the Faculty were unanimous in their opinion that vivisection *is* indispensable to the progress of medical science, and that the renunciation of the practice would not only do positive damage, but would cause an absolute paralysis of medical science, and would bring about the annihilation of its further progress. The same questions were put to the other great universities in Germany, and they returned answers to the same effect.

"The second point is as to the existence of any abuses that this law can correct or influence in the slightest degree more than that already on the statute books, and we submit that there is no evidence of the existence of any. No such evidence has been submitted by the supporters of this bill as existing in this State, and we have had representatives of the men engaged in research upon animals here, from whom it has not been possible to gain any knowledge of such abuses; they have all testified, or would have testified if the specific question had been asked of them, that none such exists to their knowledge.

"Finally, as to the point of secrecy, there is no secrecy in the laboratories of any of the men who have testified here, and none in those of others, so far as we know. Any properly minded person can obtain admission to any one of these laboratories at any time, so far as a desire to conceal what is going on is concerned. It may of course be conceivable that at the time of application there may be some specially delicate operation in progress which might delay the freest admission for a few moments; and, of course, what goes on in the Medical School is not open to the promiscuous public and should not be, and properly so. An irresponsible person, coming there without credentials, and with the fixed purpose (although this might not be known) of obtaining evidence that might be used to excite the public mind and cause agitation, should not be admitted; but nobody in the community who will take proper pains to be introduced, and who will come to the Medical School in an open manner, will be excluded."

I want to call the attention of the Committee to the present provision of the law, for if it is proposed to alter the law, it is pretty important to know what the law is now. We have[1] a law against cruelty: "Whoever overloads, overdrives or overworks, or deprives of necessary sustenance, or cruelly beats *or mutilates* an animal, or procures this to be done to any animal; or having charge or being in custody of any animal, inflicts unnecessary cruelty upon it, etc., is punishable by imprisonment in a jail for a period not exceeding one year, or by a fine not exceeding two hundred and fifty dollars, or both" (a punishment more severe than expressed in the bill before you). "A corporation which violates this provision is punishable by fine and is responsible for the knowledge and acts of its agents or servants. Officers are authorized to arrest, without a warrant, persons who are suspected of being guilty of this act, and, finally, there is a most stringent and unusual provision to the effect that when a complaint is made to a court or magistrate, and when the complainant believes, and has reasonable cause for believing, that this law is being violated in any particular building or place, and the magistrate or court is satisfied that there is reasonable cause, he may issue a search warrant to search the building. There is, therefore, in Massachusetts a law, applicable to vivisection, of the most extreme kind, which would enable any person who could satisfy a court that he has reasonable cause to suspect that cruelty was being practised in a Massachusetts medical school, or elsewhere, to procure a search warrant to search the premises and discover the animal and the parties cruelly treating it, and to cause the arrest without a warrant of the persons who are suspected of practising the cruelty. There is also a later act, passed in 1894, which absolutely prohibits the practise of vivisection in all public schools in this Commonwealth, and prohibits the exhibition of the body of an animal on which vivisection has been practised; so that this agitation is directed, as indeed has already been practically acknowledged, against the professional schools, for vivisection is not practised in any other schools in this Commonwealth."

We are constantly hearing quoted in such agitations as the present Dr. Parvin's opinion in regard to the usefulness or not of the study of vivisection. So important has this opinion been thought that the American Humane Society has seen fit to print for distribution "excerpts" of the address, — italicizing here and there, — and these excerpts have been made use of in all agitations of the nature of this bill, but not with — what shall it be called? — a *quite fair* presentation of the author's statements; as, for example, in the pamphlet of the American Humane Society, page 15, we read: "Should the law restrict the performance of vivisection? I think it ought, chiefly as an expression of public sentiment and for moral effect."

But the publishers of this pamphlet do not give the remainder of this sentence, which in the original runs on as follows:

"For violations of its provisions could usually only be discovered by a system of espionage, by the employment of detectives, of spies and informers, utterly

[1] Public Statutes, Chap. 207, paragraph 52.

alien to our system of government, and who are, as a rule, abominable."

Westcott [5] says; "If we had depended upon the results of experiments on living animals for the introduction of chloroform or ether into surgical practice, we might never have had those blessings." In contrast to this, W. H. Welch,[6] in his address on "The Influence of Anesthesia upon Medical Science," says; "The opponents of animal experimentation have endeavored to utilize for their purposes the alleged absence of experiments upon animals as the basis of this discovery. As a matter of fact, even leaving out of account the pioneer experiments upon animals by Humphrey Davy with nitrous oxide, the first successful trial of ether as a general anesthetic for human beings by Morton was preceded by his demonstration of the power of this agent to produce in dogs unconsciousness and insensibility to pain. It would be strange, indeed, if these striking results of experiments upon animals had no influence in inducing him to test their applicability to human beings. It must, however, be admitted that the production of anesthesia in man by inhalation of ether was not preceded by such numerous and poperly conducted experiments on animals as were required to afford any adequate conception of its effects or its possibilities of danger." In other words, Dr. Morton took a very serious risk in his experiments at the Massachusetts General Hospital — without, as we should think to-day, having made the necessary preliminary experiments upon animals to fully study the effects of the agent he proposed to use.

We have been told here that the results of vivisection are useless in advancing our knowledge of disease. Such statements *can* be made only by those who are helplessly or wilfully ignorant of the facts, and as illustrations in point, I present to you these plates of the results of the treatment of cretinism with injections of thyroid extract, and the colored representations of the behavior of the diphtheritic membrane after the administration of diphtheria antitoxin; the latter can be seen any day of the year at the South Department of the Boston City Hospital. It seems to me, gentlemen, that the change represented in the condition of one such child as is pictured among the cretins is a justification for the work that we are defending.

One of the witnesses for the bill in one of his communications to the public press takes ground that I believe to have been quite unintentional. Because Dr. Joseph Winters, of New York, has not been in accord with the general feeling in regard to the specific nature and value of the antitoxin of diphtheria, his name has been used to give implied added weight to the assertions against the value of animal experimentation in medicine. The following letter of Dr. Winters will demonstrate that his name must be absolutely excluded from any arguments against this method of investigation in the future.

NEW YORK CITY, March 1, 1900.

MY DEAR DR. ERNST: — Your letter to Dr. Park has been referred to me by him. I cannot understand how my attitude on animal vivisection could have been called in question. Vivisection has done so much for localization of disease processes of the nerve centres that every well-read medical man must feel it imperative that he should favor this valuable guidance for the surgeon in the relief of diseases of the nervous system. But for animal vivisection there could never have been a Claude Bernard, a Charcot, a Ferrier, and hosts of others equally well known, and valuable workers in diseases of the nervous system. All that they have done for the medical profession and for mankind throughout the world has had as its basis the results of vivisection. In every department of medicine every well-trained clinical physician realizes the debt he owes to the writings of those who have so patiently conducted experiments on animals in the physiological laboratory. All they have done is a thankless task. Very few physicians there are in the world who would be willing to relinquish the fascinations of practical medicine for the thankless task of the experimental physiologist. It grieves me to think that the value of this work should be questioned by intelligent, thoughtful and rational people, where the enthusiastic antivivisectionists are to be classed. Would that they could realize how much their misguided efforts are interfering with the well-guided, humane efforts of the vivisectionist. It seems to me that the antivivisectionist should visit the laboratory of the vivisectionist, and see how humanely he conducts his work, before he raises his voice or takes his pen in hand. One visit to any well-directed laboratory would still his voice. Again, he should know that a large part of the success for the relief of the suffering of mankind by medical men is due to the discoveries made in the physiological laboratory by the vivisectionist. The most advanced of sympathetic practitioners of to-day would, I believe, relinquish that which is dearer to them than their own lives, namely, their efforts to relieve the sufferings of their fellow beings, were they deprived of the inspirations afforded them by the results of experiments on animals.

Excuse me, dear doctor, for this lengthy communication, but I am deeply grieved and chagrined that my name could be used by one who opposes the value to mankind of animal vivisection.

Sincerely yours,
JOSEPH E. WINTERS.

Certain representatives of the clergy and others who have experienced the benefits of the antitoxin of diphtheria have appeared before you to state their feelings in regard to the effectiveness of this treatment as it has appeared in their own experience, and with their testimony, the following letter should be submitted for your consideration:

OAK PARK, ILL., March 9, 1900.

MY DEAR DR. STONE: — I shrink, as I suppose every humane man does, from the infliction of needless pain upon any living creature. So far forth I hold with the most intense antivivisectionists. But I am persuaded that it is sometimes necessary to cause pain that pain may be prevented. I do not doubt that some vivisection has been performed with needless cruelty; on the other hand, I know some men who constantly perform it, and who are most tender-hearted, high-minded men. I favor such restrictions as put a check upon cruelty without restricting the progress of science.

I was often at the Medical School Laboratory four years ago when my children were sick with diphtheria, and saw much there and at the Boston City Hospital of the preparation and use of antitoxin. Just in proportion as I love my own children I am willing that certain guinea-pigs should be experimented upon if necessary for their sakes. I am not willing that a single guinea-pig should be tortured needlessly, but I want the man who takes the life of my child in hand to do no needless experimenting upon the child in order to save guinea-pigs. My own impression is that vivisection is sufficiently restricted in Massachusetts. If further restrictions are to be made, it ought to be done with the approval of the more intelligent physicians.

Yours very truly,
W. E. BARTON.

[5] Boston Transcript, March 1, 1900.
[6] The semi-centennial of anesthesia, Boston, 1897.

It has been said here that the antitoxin of diphtheria does no good, and when the statistics are quoted, the reply is that they are falsified, and that the percentage of mortality is brought down by adding cases that are not diphtheria, that are diphtheria *only* because the diphtheria bacillus is present in them without symptoms, or that moribund cases are excluded in making up the returns. The only place of convenient access that I know where a record is kept of cases treated with and without antitoxin of diphtheria is Lawrence, Mass., and I have here the mortality statistics of that city for the thirteen months from January 1, 1889, to February 1, 1900. The total cases of diphtheria there reported is 393. Of this number there were treated with diphtheria antitoxin 274, with a mortality of 10.2 per cent. There were 119 cases treated without antitoxin, with a mortality of 26 per cent. If antitoxin was accessible in these latter cases, a very serious responsibility lies on the shoulders of the physicians of those patients who were allowed to die without trying its beneficial effects.

The antitoxin of diphtheria is prepared by the injection of horses, and the use of their blood serum. The horses are bled at more or less frequent intervals, and that the treatment is not cruel may be seen by the photographs I present to you, which show that the animals are fat and healthy looking (having been used for the production of antitoxin for from two to four years, and constantly bled in that time), and by the assertions that I am able to make in regard to these animals, that the bleeding was not attended by any pain, as was constantly shown by the fact that they would eat from the hand while being bled, and that the trocar could be introduced in many cases without any restraint whatever, and never with more than a "twitch" lightly applied.

In their abstract of the bill before this Committee, the petitioners have summarized matters as follows:

RESTRICTIONS.

(1) "All experiments on living animals must be performed with a view to the advancement of knowledge by new discovery." This will prevent the daily application of methods of recognizing and preventing disease that have become matters of routine, such as the recognizing of hydrophobia, always made by inoculation experiments, and the preparation of vaccine virus, now always made upon calves, the preparation of the antitoxin of diphtheria, and other diseases attacking man and the animals themselves, or the utilization of any new discoveries that may be made in this direction, if indeed any are made under such a restrictive measure.

(2) "Any one performing an experiment must previously obtain a license from the Secretary of State." This is practically a prohibitory measure, for the bill requires that a license shall be obtained for each experiment, and no worker has the time to secure permission for each experiment he may be called upon to carry on, notably in the direction of diagnostic or curative procedures, which must be attended to at the time, and will not permit of delay (illustrated by Dr. Burrell's case of anthrax in his testimony).

(3) "All pain to the animal must be prevented by the use of chloroform or ether," which seems to us to be absurd, for it practically prevents the use of any other means for deadening pain, or any possibility of the discovery of any new agent for the suppression of pain in the future, such as chlorotone, now being tried.

(4) "If pain is likely to continue after the effect of the chloroform or ether has ceased, the animal must be killed before recovering therefrom;" in other words, no physician is to be allowed to take advantage of what most of us are sure is the most certain means of helping his patient in diphtheria and other like diseases; no one anxious to help the cause of suffering humanity is to be allowed to do so except in the line of what can be accomplished in the course of an hour or two, and by what practically amount to anatomical studies.

(To be continued.)

THE MECHANICS OF LATERAL CURVATURE OF THE SPINE.[1]

BY ROBERT W. LOVETT, M.D., BOSTON,
Assistant Surgeon to the Children's Hospital.

THE present paper is a preliminary one, and reports a series of observations made on the normal movements of the spine in the cadaver, and the living model, studied especially with reference to the mechanism of scoliosis. The subject is so extensive and the problems involved are so intricate that it is not possible for the writer to do more at present than to call attention to certain demonstrable facts and to certain deductions to be drawn from them.

It is a well-recognized fact that in lateral curvature of the spine, at least in cases of moderate grade, the lateral bending is associated with a twisting of the vertebræ in the long axis of the spine. To the latter phenomenon the word rotation is applied by common consent.

A large amount of literature has been accumulated in the attempt to explain the mechanism of scoliosis, especially to account for the existence of the rotation, but among the theories dealing with the subject there is no one wholly satisfactory. For the most part they are very complicated; they differ widely from each other, and no one meets with general acceptance. It is perhaps hardly worth while to enumerate them, as they may be found in such books as Hoffa and Lorenz.[2]

These theories have for the most part been formulated either from purely theoretical considerations or by reasoning back from the pathological changes found in more or less advanced cases. As neither of these methods has so far yielded satisfactory results, it may be advisable to turn to the study of the normal movements of the spine to see if in them is to be found any explanation of the phenomena observed in scoliosis.

Bradford's experiment. — One previous attempt has been made and published in this line of investigation by Bradford, who demonstrated that in the cadaver a rotary lateral curvature of the type seen in life might be produced by superincumbent weight coming obliquely upon the spinal column. This important experiment demonstrated that in the normal spine of the cadaver exist conditions capable of producing the phenomena found in scoliosis when super-

[1] Read before the American Orthopedic Association at Washington, May 1, 1900.

[2] Hoffa: Lehrbuch der orth. Chir., 1898, p. 370; Lorenz: Path. und Ther. der Seitl. Ruckgratverkrummungen, 1886, p. 17.

incumbent weight falls obliquely upon the column.[3] Some similar work on the cadaver was done by Dr. E. G. Brackett, but was never published.

The experiments described in the present paper were made by the writer during the past six months, in part at the Harvard Medical School by the courtesy of Prof. Thomas Dwight, to whose supervision and suggestions he is greatly indebted. The work was undertaken with a hope of contributing something to the present knowledge of the normal movements of the spine without especial reference to scoliosis, but early in the investigation certain phenomena bearing so closely on the causation of scoliosis were observed that the rest of the investigation was deferred and the time devoted wholly to the question of the causation of rotary lateral curvature. It is the hope of the writer to pursue the rest of the investigation at some future time.

Movements of spine. — The movements of the spine are generally accepted as being four in number :[4]

(1) Flexion (forward bending).
(2) Extension backward bending).
(3) Lateral bending (side bending).
(4) Torsion.

Although this classification is usually found in the books it has been often recognized that torsion is in some way associated with lateral bending. That lateral flexion probably does not exist as a pure movement has for some time been recognized by some if not all anatomists, and has been taught for some years by Professor Dwight. As long ago as 1844 Henry J. Bigelow[5] wrote: "The principle of torsion is illustrated by bending a flat blade of grass or a flat, flexible stick in the direction of its width. The centre immediately rotates upon its longitudinal axis to bend flatwise in the direction of its thickness. In the same way the spine, laterally flexed, turns upon its vertical axis to yield in its shortest or anteroposterior diameter." Occasional references are found to the association of torsion with lateral flexion,[6] but no definite recognition of the relation between the two seems to exist.

It is the purpose of this paper to show that lateral flexion and torsion of the spine are associated parts of one compound movement and that neither can exist without the other. That, however, in side bending from the flexed position the torsion is diametrically opposite from what it is in the extended position and that the spine follows the laws governing flexible rods in this regard.

(1) *Flexion* apparently exists as a pure forward movement and its amount varies greatly with the flexibility of the individual.

(2) *Extension* apparently exists as a pure backward movement and its amount varies greatly with the flexibility of the individual.

(3) *Lateral flexion* of the spine apparently does not exist as a pure movement. Something very like a pure lateral flexion is found experimentally in one position of the trunk, but owing to the complex conditions existing it is not possible to measure it with sufficient accuracy to say how pure the movement is or with how much torsion it is associated. In general, lateral flexion in any position of the trunk is associated with torsion.

The cadavers used in these experiments were six in number and had previously been used in the dissecting-room. The sternum and contents of the chest and abdomen, as well as the arms and scapulæ, had been removed, as well as the abdominal and most of the back muscles.

Experiment, cadaver: Flexion. — If the pelvis of a normal cadaver is fixed in a vice and the upright spine flexed, and by a cord attached to the atlas pulled to the left side, a very marked torsion occurs through the whole column, and each vertebra appears to change its relation to the one below it, not only in the lateral movement that it makes, but by torsion around the long axis of the spine. And this torsion always occurs in one direction in flexion, the bodies of the vertebræ turning toward the convexity of the curve and the spinous process toward the concavity. Each vertebra twists upon the one below it in the long axis of the spine, the body turning in one direction and the spinous process in the other. In the cadavers experimented upon the torsion of the cervical vertebræ upon the last lumbar in side bending amounted to perhaps forty-five degrees in flexion. This torsion is slight in the lumbar region and marked in the dorsal region, especially between the fourth and twelfth dorsal vertebræ.

In the photograph (Fig. 1) thin boards are shown fastened to the chest and pelvis to mark the lateral plane of each, and hat pins were driven into the spinous processes of the first sacral, one of the lower dorsal, one of the upper dorsal, and one of the lower cervical vertebræ, to mark the anteroposterior axis of each vertebræ. By having both of these modes of measurement at the same time, it may be shown that the variation of the boards corresponds to the torsion of the vertebræ — as represented by the pins driven into them.

Model: Flexion. — The same experiment was then made upon two models. Both were young women, professional models and markedly flexible; one had been upon the stage as a dancer, and the other kept herself flexible by exercises to enable her to take difficult poses without lameness. If the model bends forward and flexes her spine to the left the same phenomenon occurs that is seen in the cadaver. The spinous processes turn to the concavity of the curve; that is, to the left, which means that the vertebral bodies turn to the convexity and the right side of the chest becomes more prominent behind; that is, the rotation is backward on the convex side of the curve, as in the rotation of scoliosis. In the experiments the models were ignorant of the purpose of the experiment and were told to bend to the left without twisting.

Fig. 2 shows Model 1 with boards fastened to pelvis and chest in a similar position to that of the cadaver in Fig. 1. Fig. 3 shows Model 2 in the same position as that of the cadaver in Fig. 1 with cardboard indicators fastened over the spinous processes by sticking plaster. The rotation backward of the chest on the convexity of the curve may be seen in both Figs. 2 and 3.

In reply to a possible criticism of the experiment, that the scapulæ, ribs and muscles cause an apparent rotation of the boards in the living model which does

[3] Bradford and Lovett: Orthopedic Surgery, 2d Ed., 1899, p. 94.
[4] Poirier et Prenant: Traité d'Anat. Hum., I, 744; Gray's Anatomy; Landerer: Mechanotherapie, 1894, p. 217, etc.
[5] Orthopedic Surgery. Boylston Prize Essay for 1844, Boston, 1845, p. 168.
[6] Hoffa: Lehrbuch der orth. Chir., 1896, p. 372; Henke: Handbuch der Anat. und Mech. der Gelenke, p. 66; v. Meyer: Virch. Arch., xxxv, p. 225; Tubby: Orthopedic Surgery, London, 1896, p. 143; W. A. Lane: Guy's Hospital Reports, xxix, p. 293.

not exist, it may be said that the direction of the boards and indicators have been shown to correspond to each other in the cadaver, and each one of these taken separately behaves in the model as it does in the cadaver. Moreover, the rotation of the spinous processes of the vertebræ in the live model can be easily appreciated by the fingers, showing that it is a real torsion and not an apparent one.

Lateral bending, then, in both cadaver and model in positions of marked flexion is accompanied by torsion, and this torsion is in this position always in one direction, and is of the same type as the rotation seen in scoliosis; that is, backward on the convexity of the curve, or, in other language, the bodies of the vertebræ turn toward the convexity of the lateral curve. Various attempts were made to reverse this torsion while making side bendings in the flexed position by pulling the vertebræ apart, pressing them together, etc., but in all cases in both cadaver and model the type of torsion described above persisted.

Cadaver: Extension. — If the spine of a cadaver is fixed in an upright position in a vice which clamps the sacrum, and if this spine is hyperextended (bent backward) and pulled to the left in this extended position by a cord attached to the atlas, a torsion takes place, but this torsion is exactly the reverse of the one occurring in the similar pull to the left made in the flexed position. The spinous processes rotate toward the concavity of the curve and the type of the rotation is the reverse of that usually seen in scoliosis in life (Fig. 4). This torsion occurs less in the lower dorsal and lumbar region than does the one described in speaking of flexion, and is located higher in the column. The method of observation was by boards and pins, as in the flexion experiment.

Model: Extension. — If, now, a model is asked to extend her spine and then to bend to the left, it is noticed that the board marking the lateral plane of the chest turns backward on the side of the concavity of the curve, which is the reverse of the condition found in side bending in flexed positions; that is, in the model the rotation of the vertebral bodies must be toward the side of the concavity. This type of torsion is constant in all side bendings in the extended positions as observed in models and in patients.

Fig. 5 shows the Model 1 bending to the left with backward rotation of the chest on the left side.

Fig. 6 shows Model 2 bending to the left in an extended position, with cardboard indicators fastened to the skin over the sacrum, the upper lumbar, the middle dorsal, and the lower cervical region. It will be seen that the indicators show a marked rotation of the spinous processes in the dorsal region toward the convexity of the curve, and the bodies must rotate toward the concavity. Compared with Fig. 4 it will be seen that the indicators point in the same direction as in the cadaver placed in the same position, and compared with Fig. 3, a photograph of the same model bending to the left in the flexed position, it will be seen that the indicators point in the opposite direction.

In the intact spine of the cadaver, therefore, and in the model, side bending in the extended position is accompanied by torsion of the vertebral bodies toward the concavity of the curve; in other words, the rotation is backward on the concavity of the curve, which is the reverse of the condition ordinarily seen in life in scoliosis.

Experiment, cadaver: Flexion and extension. — As the complicated movements of the spine in these experiments introduced an element of mixed planes most confusing to the observer, the following experiment was undertaken by Professor Dwight and the writer at the suggestion of the former, in order to obtain a graphic record of the torsion: A spine was placed upright in a vice at the edge of a table three feet from the floor; a hole was bored through the eleventh dorsal vertebra from behind forward; that is, in the median plane of the body. Through this hole was passed a brass rod five feet in length, which projected three feet behind the spine and a short distance in front of it. This rod, of course, represented the anteroposterior axis of the vertebræ. By means of a plumb line, dropped from the rod, the direction in which this rod pointed could be projected upon the floor and its variations in the horizontal plane recorded graphically. This eliminated any element of confusion on the part of the observer by giving a permanent and accurate record. The spine was then flexed, and before being bent to either side, the direction of the indicator was projected. The spine was then bent sideways to the right and to the left in the flexed position and the direction of the indicator recorded in those positions. It was then extended and bent to the right and left in the extended position and a diagram was obtained (Fig. 7). The crossing of the two lines to the right of the median plane, one for right flexion and one for right extension, shows plainly enough that there exists one type of torsion for side bending in flexion and another for bending to the same side in extension.

Pure lateral flexion. — If one type of torsion changes to the other type in going from flexion to extension, there must be a position between marked flexion and marked extension where the planes cross, and in this position, if anywhere, the purest lateral flexion must exist. By experiment in both cadaver and model this plane was found to be in slight flexion of the spine in the upright position, perhaps fifteen degrees in front of perpendicular. In the sitting position in the model, this plane exists in a slightly more extended position than when standing upright. In the upright position of the soldier, side bending is accompanied by the extension type of torsion.

Reasons for torsion. — It is obvious from these experiments that there must be some fundamental reason for the constant occurrence of one type of torsion for side bendings in flexion and the occurrence of another type in extension, as well as for the constant association of torsion with side bending. The vertebral column is a flexible rod capable of bearing great weight. It is not equally flexible in all directions, but it is of course capable of some movement in all planes, and as such, should come under the control of the laws governing flexible rods in general. The extent of any of the movements of the spine are, of course, greatly influenced by the shape of the vertebral bodies, the curves of the spine, the character of the articular processes, the resistance of the ligaments and the relative strength of the muscles. But in spite of these complicating elements, it seemed worth while to investigate the behavior of flexible rods in general under similar conditions. Professor Dwight suggested that this line of investigation might be of use.

To Professor Hollis, of Harvard University, the

FIG. 1. Spine fixed in vice, flexed and bent to the left. The boards mark the plane of the pelvis and chest. The hat pins are driven into the spinous processes. The torsion of the spine is shown by both boards and pins, the bodies turning to the right.

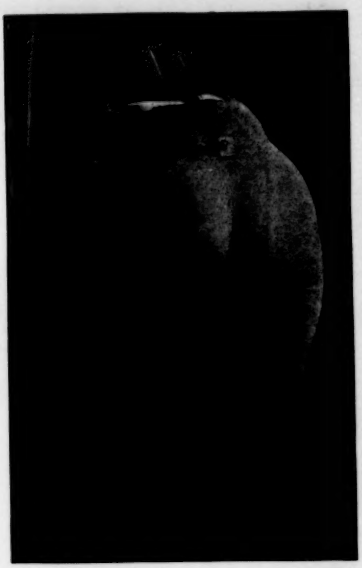


FIG. 3. Model flexed and bent to the left. The cardboard indicators have turned to the left.

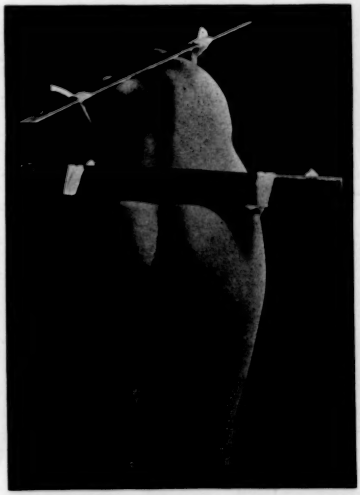


FIG. 2. Model with spine flexed and bent to the left. The boards show the planes of chest and pelvis. The board marking the chest has rotated backward on the convex side of the curve.

FIG. 5. Model with spine extended bending to the left. The board marking the plane of the chest has rotated backward on the left side.

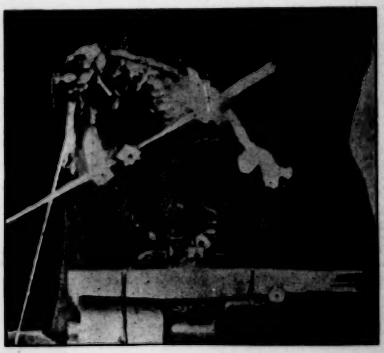


FIG. 4. Spine fixed in vice, hyperextended and bent to the left. The boards mark the plane of the pelvis and chest. The pins are driven into the spinous processes. The pins have turned to the right, showing that the vertebral bodies have twisted to the left; that is, toward the concavity of the lateral curve.

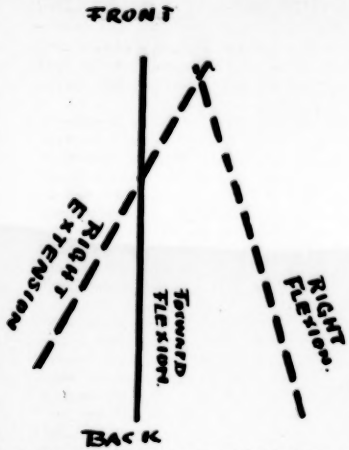


FIG. 7. Diagram of position of brass rod in right flexion and extension of spine of cadaver.

FIG. 8. Spine without vertebral bodies extended and bent to the left. The rod marking the plane of the chest has rotated backward on the left. (Compare Fig. 4.)

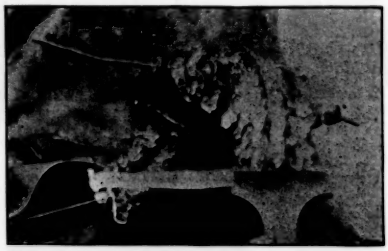


FIG. 9. Spine without bodies flexed and bent to the left. The rod marking the plane of the chest has rotated backward on the left. (Compare Fig. 1.)

FIG. 6. Model with spine extended bending to the left. The cardboard indicators show that the spinous processes have turned to the right and the bodies to the left.

FIG. 10. Model twisting to the left, showing the consequent lateral deviation of the spine

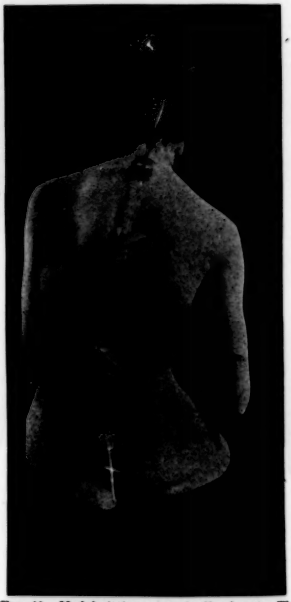


FIG. 11. Model sitting on an inclined seat. The cardboard indicators show that the bodies of the vertebræ have rotated to the left; that is, toward the convexity of the lateral curve.

writer is indebted for much information on the mechanical side of the question.

From the mechanical point of view, torsion results from any motion in which all the particles of a straight flexible rod do not move in parallel planes. Consequently, if such a rod is bent in two planes at the same time, torsion must inevitably occur. The vertebral column is not a straight flexible rod, but one bent in the anteroposterior plane by a series of gentle curves; side bending must therefore inevitably lead to torsion, because it means bending in two planes. Nor does the fact that the intervertebral discs permit motion in all directions affect the question, because from a mechanical point of view the vertebral column behaves in general as it would if it were a homogeneous flexible rod, and one does not have to wait for torsion to occur until the intervertebral discs are compressed and the edges of the vertebræ come into contact, for, from a mechanical point of view, the torsion begins with the beginning of the side bending. It therefore seems very unlikely that pure lateral flexion of the spine ever exists.

A strip of sponge rubber, half an inch in diameter and fourteen inches long, rotates in the same way that the vertebral column does in the same position. It rotates in one direction for side bending when bent forward and in the opposite direction for side bending when bent backward, and the rotation follows the same rule observed in the vertebral column in the cadaver and in life. A lateral curvature, in what corresponds to the flexed position of the spine, may be produced in the rubber strip following the same rule of rotation seen in life; that is, the front of the rod turns towards the convexity of the lateral curve. An artificial lateral curvature in the rubber strip, made in what corresponds to the extended position of the spine, results in a reverse rotation to that from the rotation of the flexed position. A piece of rattan, a gum-elastic catheter, a piece of rubber tubing, or a strip of sponge rubber, round or square, behave all in the same way, and rotate in the same direction as does the spine when placed in a similar position to those described in the experiments on the model and cadaver except that they allow pure side bending in the lateral plane.

For side bendings, when bent forward, the flexible rod rotates one way, and when bent back and to the same side it rotates the other way. So far as this analogy goes, the spine, therefore, in its rotations does no more than to follow certain laws governing flexible rods, and the elaborate theories to account for the occurrence of rotation in scoliosis may be replaced by the statement that the spine behaves in general as any flexible rod would under similar condition so far as rotation is concerned.

Articular processes.— Although it is easy to understand that the column of vertebral bodies by itself might easily behave as a flexible rod, yet the articular processes cannot be left out of account. They must be an important factor in determining torsion, and they must do one of two things. Either they must fall in with the behavior of the flexible column of bodies and serve to carry out the rotation which would occur without them, or they must obstruct or reverse the rotation which would occur in the column of vertebral bodies alone.

Experiments, cadaver: Spine without vertebral bodies. — The experiments to be given seem to show that when the articular processes are in contact they merely serve to accentuate the same rotation that would be present if the column of vertebral bodies were by itself.

Two vertebral columns, which had been previously used and which had conformed to the usual rule, were prepared for experiment by removing the column of bodies by cutting through the pedicles. The columns experimented upon then consisted of laminæ and articular processes with their ligaments. The ribs were not removed from these columns. These could no longer be regarded as flexible rods, and were only anatomical preparations to demonstrate just what part in rotation the articular processes would play if left to themselves.

Each of these spines was then placed in a vice as in the experiments described above and pulled to the side in the same way. When the spine was extended and pulled to the left rotation occurred of the same type as in the intact column in the similar position, a rotation of the ribs backward on the side of the concavity. That is, the articular processes alone do the same thing in side bending in the extended position that the intact column does (Fig. 8).

In side bending from the flexed position, however (Fig. 9), the spine without bodies rotates in just the reverse direction from that of the intact spine in the same position, the rotation of the ribs being backward on the side of the concavity. This, of course, suggests that in side bending in the extended position the articular processes are active, but that in flexed positions they are not.

To see if this state of affairs really existed, a spine which had been used and which had followed the rule was sawed longitudinally in such a way as to divide each articular process in the long axis of the spine. The portion on the outer side of this cleft was removed, giving a view of each articulation. The spine was then flexed, and it was found that as moderate flexion began the articular joint surfaces in the dorsal region, which was the particular field observed, began to separate, and in extreme flexion were separated by an interval of perhaps one thirty-second of an inch. As the spine was extended they seemed to come into close contact at about the point where the flexion rotation changes to the extension rotation. In marked extension they were firmly in contact.

The conclusion from this is that the column of vertebral bodies alone, without articular processes, would rotate in just the same way in side bending in flexion and extension that the column does with articular processes present. That in flexion they are not sufficiently in contact to determine the rotation, but that in extension they are in contact, and are the active factors in determining the rotation which occurs in extension. That rotation is, however, in the same direction that it would be if the column consisted of vertebral bodies alone. They apparently serve to accentuate and carry out the behavior of a flexible rod in general, although they undoubtedly aid in preventing pure lateral flexion of the spine.

Leaving for a moment out of consideration the behavior of the column without vertebral bodies, and confining ourselves to the intact column in the cadaver and the model, it is shown by the experiments that there is one torsion for side bending in flexion and a diametrically opposite one for side bending in extension, and that the type of torsion seen in scoliosis in

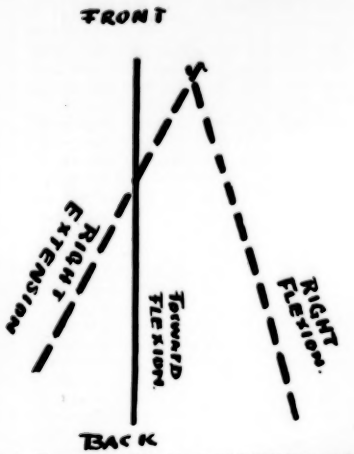


FIG. 7. Diagram of position of brass rod in right flexion and extension of spine of cadaver.

FIG. 8. Spine without vertebral bodies extended and bent to the left. The rod marking the plane of the chest has rotated backward on the left. (Compare Fig. 4.)

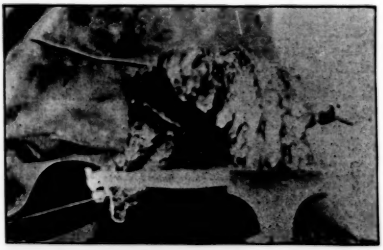


FIG. 9. Spine without bodies flexed and bent to the left. The rod marking the plane of the chest has rotated backward on the left. (Compare Fig. 1.)

FIG. 6. Model with spine extended bending to the left. The cardboard indicators show that the spinous processes have turned to the right and the bodies to the left.

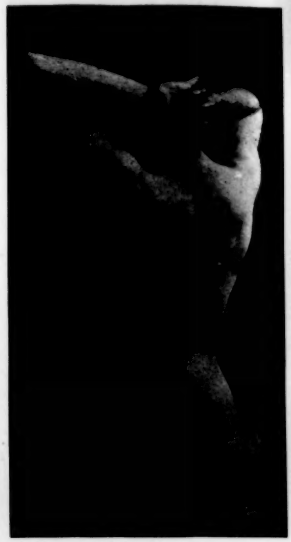


FIG. 10. Model twisting to the left, showing the consequent lateral deviation of the spine

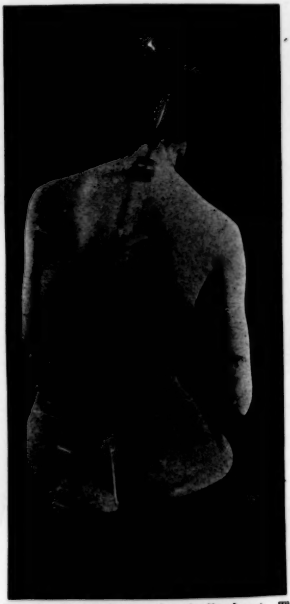


FIG. 11. Model sitting on an inclined seat. The cardboard indicators show that the bodies of the vertebræ have rotated to the left; that is, toward the convexity of the lateral curve.

writer is indebted for much information on the mechanical side of the question.

From the mechanical point of view, torsion results from any motion in which all the particles of a straight flexible rod do not move in parallel planes. Consequently, if such a rod is bent in two planes at the same time, torsion must inevitably occur. The vertebral column is not a straight flexible rod, but one bent in the anteroposterior plane by a series of gentle curves; side bending must therefore inevitably lead to torsion, because it means bending in two planes. Nor does the fact that the intervertebral discs permit motion in all directions affect the question, because from a mechanical point of view the vertebral column behaves in general as it would if it were a homogeneous flexible rod, and one does not have to wait for torsion to occur until the intervertebral discs are compressed and the edges of the vertebræ come into contact, for, from a mechanical point of view, the torsion begins with the beginning of the side bending. It therefore seems very unlikely that pure lateral flexion of the spine ever exists.

A strip of sponge rubber, half an inch in diameter and fourteen inches long, rotates in the same way that the vertebral column does in the same position. It rotates in one direction for side bending when bent forward and in the opposite direction for side bending when bent backward, and the rotation follows the same rule observed in the vertebral column in the cadaver and in life. A lateral curvature, in what corresponds to the flexed position of the spine, may be produced in the rubber strip following the same rule of rotation seen in life; that is, the front of the rod turns towards the convexity of the lateral curve. An artificial lateral curvature in the rubber strip, made in what corresponds to the extended position of the spine, results in a reverse rotation to that from the rotation of the flexed position. A piece of rattan, a gum-elastic catheter, a piece of rubber tubing, or a strip of sponge rubber, round or square, behave all in the same way, and rotate in the same direction as does the spine when placed in a similar position to those described in the experiments on the model and cadaver except that they allow pure side bending in the lateral plane.

For side bendings, when bent forward, the flexible rod rotates one way, and when bent back and to the same side it rotates the other way. So far as this analogy goes, the spine, therefore, in its rotations does no more than to follow certain laws governing flexible rods, and the elaborate theories to account for the occurrence of rotation in scoliosis may be replaced by the statement that the spine behaves in general as any flexible rod would under similar condition so far as rotation is concerned.

Articular processes.— Although it is easy to understand that the column of vertebral bodies by itself might easily behave as a flexible rod, yet the articular processes cannot be left out of account. They must be an important factor in determining torsion, and they must do one of two things. Either they must fall in with the behavior of the flexible column of bodies and serve to carry out the rotation which would occur without them, or they must obstruct or reverse the rotation which would occur in the column of vertebral bodies alone.

Experiments, cadaver: Spine without vertebral bodies. — The experiments to be given seem to show that when the articular processes are in contact they merely serve to accentuate the same rotation that would be present if the column of vertebral bodies were by itself.

Two vertebral columns, which had been previously used and which had conformed to the usual rule, were prepared for experiment by removing the column of bodies by cutting through the pedicles. The columns experimented upon then consisted of laminæ and articular processes with their ligaments. The ribs were not removed from these columns. These could no longer be regarded as flexible rods, and were only anatomical preparations to demonstrate just what part in rotation the articular processes would play if left to themselves.

Each of these spines was then placed in a vice as in the experiments described above and pulled to the side in the same way. When the spine was extended and pulled to the left rotation occurred of the same type as in the intact column in the similar position, a rotation of the ribs backward on the side of the concavity. That is, the articular processes alone do the same thing in side bending in the extended position that the intact column does (Fig. 8).

In side bending from the flexed position, however (Fig. 9), the spine without bodies rotates in just the reverse direction from that of the intact spine in the same position, the rotation of the ribs being backward on the side of the concavity. This, of course, suggests that in side bending in the extended position the articular processes are active, but that in flexed positions they are not.

To see if this state of affairs really existed, a spine which had been used and which had followed the rule was sawed longitudinally in such a way as to divide each articular process in the long axis of the spine. The portion on the outer side of this cleft was removed, giving a view of each articulation. The spine was then flexed, and it was found that as moderate flexion began the articular joint surfaces in the dorsal region, which was the particular field observed, began to separate, and in extreme flexion were separated by an interval of perhaps one thirty-second of an inch. As the spine was extended they seemed to come into close contact at about the point where the flexion rotation changes to the extension rotation. In marked extension they were firmly in contact.

The conclusion from this is that the column of vertebral bodies alone, without articular processes, would rotate in just the same way in side bending in flexion and extension that the column does with articular processes present. That in flexion they are not sufficiently in contact to determine the rotation, but that in extension they are in contact, and are the active factors in determining the rotation which occurs in extension. That rotation is, however, in the same direction that it would be if the column consisted of vertebral bodies alone. They apparently serve to accentuate and carry out the behavior of a flexible rod in general, although they undoubtedly aid in preventing pure lateral flexion of the spine.

Leaving for a moment out of consideration the behavior of the column without vertebral bodies, and confining ourselves to the intact column in the cadaver and the model, it is shown by the experiments that there is one torsion for side bending in flexion and a diametrically opposite one for side bending in extension, and that the type of torsion seen in scoliosis in

life is the one occurring in side bendings in flexion where, in orthopedic terms, the rotation is backward on the side of the convexity of the curve.

(4) *Rotation.*— The fourth motion of the spine mentioned at the beginning of the paper must now receive attention. If lateral flexion is associated always with rotation, if the two are component parts of one composite movement, one would expect as a corollary to what has gone before that rotation could not exist without causing lateral flexion.

An experiment was made on the cadaver, which was fixed as described above and the atlas sharply rotated to one side. A well-marked lateral deviation of the spine took place.

Model No. 1, seated on a stool, was told to twist to one side but not to bend laterally in so doing; Fig. 10 shows that a well-marked lateral deviation of the spine occurred in this experiment. A similar photograph was taken of model No. 2, showing exactly the same condition. It therefore seems as if torsion of the trunk could not occur without lateral deviation.

Accepting the fact that in the spine lateral flexion cannot exist without torsion, it is plain why rotation should accompany any degree of lateral deviation of the spine; they are two parts of one movement and neither can exist alone.

Causes of lateral deviation of the spine in life.— To account for the phenomena found in rotary lateral curvature one has then only to formulate the factors which will cause the spine to be held to one side of the perpendicular; compensatory lateral deviation must occur and with it rotation. Such causes are manifold and well recognized, for asymmetry is the rule rather than the exception. Neither the head nor the pelvis can vary from their normal relation without producing some degree of compensatory lateral deviation somewhere in the spine.

Asymmetry of the head is a factor not often taken into account. Asymmetrical position of the head is favored by the fact that in most cases the condyles of the occiput are not in their best contact with the superior articular surfaces on the atlas when the head is held straight; a closer and better contact is generally obtained by a slight twisting of the head. This fact was pointed out to the writer by Professor Dwight. Ocular defects causing improper balance of the head are an obvious cause. One has only to observe the faulty carriage of the head in many cases of scoliosis to see that here is a condition of importance and often too marked a condition to be accounted a result of the scoliosis. Asymmetry of the pelvis as described by Barwell must be accounted as a not infrequent cause of asymmetrical positions. Asymmetry of the spine itself and unequal thickness of the vertebral bodies on the right side as constrasted with the left must be remembered as a demonstrated condition.[7] Shortening of one leg is so common that it fails to attract the attention that it deserves.[8]

All these defects of conformation must lead to some lateral deviation of the spine. It depends upon the individual whether these are taken care of by nature in some compensatory way, or whether they cause a deviation notable enough to be classed as a deformity.

Aside from the structural defects causing asymmetry and consequent lateral deviation, are to be found the vicious postures resulting from attitude and occupation, which must be accounted another important factor in producing scoliosis.

Type of rotation in scoliosis.— In flexion it may be repeated that side bending of any part of the spine must be accompanied by rotation of the vertebral bodies toward the convexity of the curve. Inasmuch as the great majority of cases of scoliosis show this type of rotation, it is evident that such scoliosis must have had its beginning during flexed positions of the spine. It is a well-known fact that many cases of scoliosis are produced by round shoulders, and the muscular development of patients with scoliosis is as a rule below the average. Poor muscular development of course predisposes to a flexed position of the trunk.

It seems likely that the beginning of scoliosis is much more often acquired by children in the sitting than in the standing position, because the sitting position makes flexion of the spine more easy than does the standing position.

An experimental scoliosis with rotation is shown in Fig. 11, in which the Model 2 was asked to its squarely, but at ease, on an inclined seat. The indicators on the skin over the spinous processes show that the bodies of the vertebræ have rotated toward the convexity of the lateral curve.

Reverse rotation.— The "reverse rotation," where the rotation of the vertebral bodies is backward on the side of the concavity of the curve, has been described as occurring in life, and has been somewhat discussed.[9] Although the writer is not yet prepared to accept the fact that this apparent type of rotation is anything more than a slight lateral deviation with excessive rotation, yet the experiments above related show how the so-called "reverse curve" in scoliosis might occur from an anatomical point of view. If a column is curved laterally in the extended position this type of rotation must be found. One has only to examine a dried vertebral column to see that lateral motion between the dorsal vertebræ when their articular processes are in contact must result in the rotation of the bodies toward the concavity of the lateral curve. Moreover, such a type of rotation is an intrinsic property of any flexible column bent to the side in the extended position.

School furniture.— In the prophylaxis of scoliosis, from this point of view, correct school furniture seems to be of the greatest importance. Sitting to one side in the flexed position is to be avoided on anatomical grounds, and it is interesting to note that the weight of opinion has inclined to the style of chair and desk in which the edge of the desk overhangs the edge of the chair, the so-called "minus distance." It is easy to see that an arrangement of school furniture which allows a growing child to sit for hours with a flexed position of the spine, with muscles tired and stretched, is one which predisposes to a deformity which is associated with the flexed position. Inasmuch as we have seen that torsion causes of itself lateral deviation of the spine, the twisted posi-

[7] Herth: Zeitsch. f. orth. Chir., 1892, i p. 246; Schulthess: Zeitsch. f. orth. Chir., 1899, vi, p. 1.

[8] Hunt: American Journal Medical Sciences, January, 1879; Philadelphia Medical Times, August 3, 1878; T. Dwight: Journal of Anatomy and Physiology, xiii, 1879, p. 502; Morton: Philadelphia Medical Times, July 10, 1886; Bradford and Lovett: Orthopedic Surgery, 1899, 2d Ed., p. 595.

[9] Jach: Zeitsch. f orth. Chir., 1892, i, p. 252; Steiner and Schulthess: Zeitsch. f. orth. Chir., 1896, v; Kirmisson and Sainton: Revue d'Orthopédie, 1895, iii; Vulpius: Zeitsch. f. orth. Chir., 1896, iv, p. 63.

tion that children assume in writing, especially in connection with flexion, must of itself be accounted a direct cause of scoliosis, inasmuch as it causes lateral deviation of the spine. It has been demonstrated [10] that children who sit squarely at their writing, and who learn the upright style of writing, show a smaller percentage of scoliosis than children who learn the slanting hand, a fact easily explained from this point of view.

Treatment. — Of course, theoretical conditions such as those given above are of value only in so far as they may influence prophylaxis and treatment. Scoliosis on this supposition may be assumed to be a deformity arising from superincumbent weight, coming obliquely upon a spinal column in the flexed position. The correction, so far as possible, of asymmetrical attitudes and the prevention of undue flexion of the spine would seem to constitute the prophylaxis.

In the treatment of the condition when it exists, on this supposition, much emphasis must be laid on the detection and correction where practicable of the causes of asymmetrical attitudes. It is not always possible to do this. A short leg can be compensated for by a thicker sole, but an asymmetrical pelvis cannot be rectified.

The second and more important deduction to be made from the experiments is the importance of securing and maintaining the spine in a position of extension at the seat of the deformity. If the rotation of the extended position is the reverse of that of the flexed position, the use of extension as a means of treatment deserves a much more important place than it has received.

It is easy to see from this point of view why symmetrical gymnastics, cultivating the extensor muscles, such as those described by Teschner,[11] are of so much value; and it also explains what many of us have found out empirically, that it is desirable to hold and exercise the spine in positions of extension.

The problem seems to be, from an anatomical point of view, to bring the articular processes into firm contact, and to get their influence in counteracting the rotation acquired during flexion, as well as to call upon the intrinsic property of the spine as a flexible rod to reverse in extended positions the rotation acquired in the flexed positions. In a case of dorsal lateral curvature it is not enough to give backward flexions which shall take place chiefly in the lumbar region; such backward flexions must be made so far as possible to take effect in the region where the lateral deviation exists. It is the extended position of the deviated region that one wishes to bring about.

Given a fairly movable spine with a primary curve to the right in the dorsal region, and a rotation backward on the right side of the curve, the correction of such a rotation must be most easily made by exercises given to induce extension of the dorsal part of the spine where the deviation exists. By calling upon the intrinsic property of the spine to reverse in extended positions the rotation acquired in flexed positions, it would seem that we were pursuing the most rational course. It would seem also that forcible correction should also be made in the position of extension of the spine and that a forward thrust at the seat of the lateral deviation should diminish the rotation.

When, however, it comes to the question of fixed curves and deformed vertebræ, the question is one of such complexity and difficulty that it is impossible from these experiments to speak at present as definitely as one can in cases more nearly normal.

The use of symmetrical extension exercises and of side bendings in the extended position is, therefore, from an anatomical point of view, most important.

Gymnastics. — It must be evident from what has been said that simple gymnastic exercises are safer than complicated ones. Many persons prescribe exercises of such complexity and intricacy that no one can possibly judge just what he is doing. If side bendings inevitably cause torsion and torsion lateral deviation, they are dangerous gymnastic elements to introduce into a problem already difficult enough. Safety lies in prescribing only exercises of which one can estimate the anatomical effect.

The writer is fully aware that this paper leaves out of consideration the subdivision of lateral curvature into the varieties according to their etiological types as well as the various types of curves. Given, as we have in the spine, the mechanism ready to produce a scoliosis and a superincumbent weight coming obliquely upon the column from some of the causes mentioned above, the column will yield where it is weakest; it may be in the lumbar region or in the dorsal. Compensatory curves will occur, bony deformity will result if the condition continues, and the complicated structure of the parts involved will allow of almost infinite variety in the location and the character of the curve. The ribs, of course, follow the rotation of the vertebræ to which they are attached. The writer has endeavored to deal only with the broader aspects of the question and to avoid generalizations from clinical experience.

SUMMARY.

This paper may be summed up in a few words as follows:

Torsion and side flexion of the spine are parts of one compound movement and neither exists to any extent alone. Lateral deviation of any part of the spinal column is therefore necessarily associated with torsion (rotation) at the seat of the deviation.

In flexed positions bending is associated with torsion in one direction, in extended positions by torsion in the opposite direction. In this it follows simply the mechanical law governing flexible rods, which rotate in general in the same way in corresponding positions. From the kind of torsion observed in scoliosis it is obvious that the deformity originates in the flexed position of the spine. The correction of the rotation would therefore seem to be logically made by throwing the spine into extended positions and in taking side bendings from extended positions.

Sittting in the flexed position by school children is likely to be harmful, and sitting in a twisted position of necessity induces lateral deviation temporarily. The immediate cause of lateral deviation is, as a rule, to be found in some asymmetry of development or posture which leads to an oblique direction of superincumbent weight, causing the spine to deviate from the middle line.

[10] Burchard: Zeitsch. f. orth. Chir., 1892, ii, p. 1; Kotelmann: School Hygiene, p. 315.

[11] Teschner: Transactions American Orthopedic Association, vol. ix, p. 10.

MALARIA AND MOSQUITOES.

BY IRVING C. ROSSE, M.D., F.R.G.S., WASHINGTON, D. C.

MUCH that has lately appeared in the journals relative to malaria and mosquitoes is at variance with the medical experience and personal observation of myself and others. The mention of a few facts of a different nature, which seem inconsistent with the allegations of tropical medicine that the mosquito is an agency in the spread of malaria, may therefore be in order.

More than usual experience as a traveller in such latitudes as tropical America, Africa, the vicinity of the North Pole, and many out-of-the-way islands never visited by the globe-trotter, has brought me into much practical contact with the question. Medical geography, however, does not explain such incongruities as the observance of malarial fever in mountainous places like the Island of Mauritius, the high Sierras of Spain, or in certain parts of Japan and Alaska, while there is almost exemption, for instance, in the marshes around the city of Mexico and in certain islands wanting in altitude, as Saint Helena and Bermuda. Moreover, the very old modern notion which attributed to living organisms the production of malaria, has been more labored than advanced since the days of Vitruvius and Columelle, who believed paludism owing to insects that inhabited marshy regions. The question as to the nature of malaria has varied according to the epoch, and although of late years its investigation has assumed more scientific direction and development, many vague generalities still prevail both among the people and physicians. For instance, all the common affections incident to atmospheric vicissitudes, bad cooking and general irregularity of living that obtain in Washington are called malaria. I have known Bright's disease, cancer of the stomach, and even basilar meningitis, chronic alcoholism, dorsal tabes, and other nervous affections to be mistaken for malaria and treated as such. Some of the veriest nonsense has been written as to the notions concerning malaria; on the one hand, the metaphysical hypothesis of the marsh acting as an occult power, on the other, that of living organisms being concerned in its production. In the present development of the subject an order of mind not content with studying phenomena only seems to be satisfied with the sensuous notion conveyed by the bacillus malariæ, and its transmission by the genus anopheles.

It is claimed that a single mosquito may infect an individual, or, in fact, several individuals, for the investigators have found numerous parasites in the salivary glands of mosquitoes by whose bites they aver they have experimentally produced malaria in healthy subjects. Two Italians want us to believe that nearly all of forty-two harvesters near Rome had become affected with malaria at the end of July or early in August from mosquito bites, while a physician from the London School of Tropical Medicine has erected a bungalow in the most malarial part of the Roman Campagna to collect and send mosquitoes to England to bite healthy persons and thereby produce experimental intermittent fever. If experience counts for anything, it is safe to say that the persons volunteering for the test will never have the fever.

I am not aware that Arctic voyagers have ever suffered from any form of malaria after encountering mosquitoes, which have caused great annoyance to explorers as far north as man has penetrated. Myriads of mosquitoes make life almost unendurable in northern Siberia, and Arctic mosquitoes as encountered during the cruise of the United States steamer *Corwin* in the Arctic Ocean surpassed anything of the kind I ever experienced elsewhere. So annoying were they at times that it was almost impossible to use instruments in taking observations when the position of a spot on shore was to be determined. On one occasion at a desolate spot on the top of Chamisso Island, about two hundred feet above the sea, we found an astronomical station that had been established by the English in search of Sir John Franklin, and near it was a notice telling of a bottle with information buried so many feet to the magnetic north. Curiosity, of course, prompted to get it by all means, but the mosquitoes coming in such myriads actually caused the search to be abandoned. Many of the *Corwin's* crew were seriously incommoded by their bites and stings on exposed parts of the body, one man's neck and face being so swollen from this cause as to result in temporary loss of eyesight. Yet not a single trace of malaria occurred in any of the crew, except in the case of a man who had come from the Chagres River a few weeks before. Perhaps the mosquitoes were not anopheles, although their bite and venom was as sharp as that of their southern congeners.

On another occasion when surgeon to a training ship with a healthy crew from a New England port, a stay of several days was made at the Delaware breakwater. Sleep was impossible during the several days of acute misery spent there, owing to extreme annoyance of the mosquitoes. No one questions the notorious reputation of the Chesapeake peninsula for malaria and anopheles, and if there be anything in the alleged transmission, an epidemic of malarial fever should have occurred. But such was not the case. Many months afterward not the slightest trace of paludism had appeared in any of the crew.

I may also cite similar instances where healthy people from the North have been temporarily exposed to bites in the vicinity of Norfolk, Va., at Tybee Island, Ga., the New Orleans quarantine, and on the Rio Grande River, all points at which anopheles prevail — yet not one of whom has been affected by malaria.

During a considerable residence in southern France and in Italy, I had frequent occasion to study this question. Monte Carlo is most prominently associated in my mind with broken sleep caused by mosquitoes during an autumnal visit. Yet among those of my personal acquaintance with the same experience none has since showed the slightest trace of malaria.

A similar remark applies to Leghorn and to Rome, where, owing to the most important changes in public hygiene that Europe has ever witnessed, malarial fever is seldom seen except among the poorer classes. Englishmen and Americans, who constitute two-thirds of the foreigners in Rome, now reside there for years without an attack of malaria, in spite of mosquitoes and of what the Italians consider their eccentric and imprudent habits. I am aware that the books written on the climate of Rome and the Campagna would alone make a library of more than one thousand volumes; hence, further digression would be almost as extensive as the decayed grandeurs of the

classic city itself. The old tradition of applying to every ailment from a cold to enteric fever the generic term "Roman fever," a vague disease that has no place on the nosological table, has created a prevailing notion hard to correct. As a matter of fact, the study of mortuary statistics and the sanitary condition of Rome, where I spent some time as sanitary inspector for the Government, show that with the exception of London, it is the best watered, the best drained and healthiest capital in Europe, and that a European or a native of New England runs greater risk of contracting malarial fever in Washington, where it is more prevalent and where anopheles are equally aggressive. The latest medical information from South Africa shows the entire absence of malaria in many localities where mosquitoes are most troublesome. An old and experienced practitioner of New Orleans tells me that the same is true of Louisiana, notably among residents of the salt marshes extending from six to fifteen miles inland from the Gulf. On the other hand, I am told that malarial fevers are common in the foot-hills of Virginia, as at Charlottesville, where mosquitoes are such a negligible quantity as to be almost unknown.

Perhaps the foregoing remarks lack the more labored details of "malarial parasitology" and the concinnity of scientific observers, who may place different interpretations upon an unsettled question. According to the best entomological authority, the gnats herewith mentioned were in most instances of the genus anopheles. The facts relative thereto are honestly submitted for what they are worth without inclination or bias, and speculation is left to the reader.

Reports of Societies.

AMERICAN ORTHOPEDIC ASSOCIATION.

FOURTEENTH ANNUAL MEETING, HELD IN WASHINGTON, D. C., MAY 1, 2 AND 3, 1900, HARRY M. SHERMAN, M.D., OF SAN FRANCISCO, PRESIDENT.

FIRST DAY.

DR. V. P. GIBNEY presented a paper entitled

THE SIMPLE AND EFFICIENT TREATMENT OF CALCANEUS PARALYTICUS IN YOUNG CHILDREN,

in which he advocated treatment by means of plaster of Paris in complete extension, changing the plaster every three or four months.

DR. L. A. WEIGEL, of Rochester, spoke of the danger of excoriation, and referred to a case in which the foot was still in the calcaneous position because there was no form of dressing which could be applied to such a case without risk of producing gangrenous ulceration.

DR. JOHN RIDLON, of Chicago, remarked that the idea of improving the function by prolonged and constant retention in an appropriate position was not new, for Mr. Hugh Owen Thomas had practised this method systematically in a large number of cases. The object was to keep up a state of tension, and for this purpose he used a shoe with a wedge sole, two and one-half inches thick at the heel and thin in front, reinforced by a bar extending two-thirds of the length of the shoe and up the back of the leg to the calf.

DR. H. P. H. GALLOWAY, of Toronto, referred to a class of cases in which, he said, the shortening of the tendo Achillis caused either supination or pronation according to the direction the foot happens to be given.

DR. A. B. JUDSON, of New York, said he had abolished the joint at the ankle. The first effect of the apparatus was to transfer the weight of the body from the anterior part of the foot to the anterior side of the upper part of the skin. In cases of extreme calcaneus the gait could be made absolutely perfect if managed in this way.

A FINAL REPORT ON THE USE OF PURE CARBOLIC ACID IN THE TREATMENT OF TUBERCULAR AND PURULENT DISEASES OF JOINTS AND BONES.

DR. A. M. PHELPS, of New York, read this report. His plan is to lay open the capsule for about two-thirds of its extent, irrigate the joint cavity with 1–1,000 bichloride of mercury solution; then fill it with pure carbolic acid, and after this had been allowed to remain for just one minute, wash it out first with strong alcohol, and afterward with a two-per-cent. solution of carbolic acid. In the last eighteen months he had operated upon 70 cases. The results had been very satisfactory, and, on an average, the cases of excision had been discharged from the hospital at the end of three weeks.

DR. ROBERT W. LOVETT, of Boston, said that at the Children's Hospital in his city they had endeavored to prevent abscesses by putting the patients to bed whenever there was irritative muscular action about the joints. When an abscess had formed, the joint was freely opened, irrigated with bichloride and drained.

THE MECHANICS OF LATERAL CURVATURE OF THE SPINE.[1]

DR. ROBERT W. LOVETT, of Boston, read this paper.

SOME OF THE PROBLEMS INVOLVED IN THE TREATMENT OF LATERAL CURVATURE OF THE SPINE.

DR. NEWTON M. SHAFFER, of New York, described by means of diagrams his conception of the mechanical principles involved, and stated that he had arrived at practically the same conclusion as had Dr. Lovett.

THE RELATION OF DEFORMITY OF THE PELVIS TO LATERAL CURVATURE OF THE SPINE.

DR. H. P. H. GALLOWAY, of Toronto, read this paper. He said that many writers had considered pelvic distortion to be the effect of the lateral curvature, but personally he was inclined to believe it was the cause. It seemed more logical to look for the faulty construction in the foundation than in the superstructure.

SPASMODIC LATERAL CURVATURE OF THE SPINE.

DR. ARTHUR J. GILLETTE, of St. Paul, presented in this communication a report of several cases of hysterical curvature.

THE RESULTS OF MY OBSERVATIONS IN LATERAL CURVATURE OF THE SPINE, CLINICALLY, MECHANICALLY AND PATHOLOGICALLY.

DR. A. M. PHELPS, of New York, gave in this paper a description of a post-mortem study on a severe

[1] See page 622 of the Journal.

case of rotary lateral curvature. The subject was forty-five years of age. Throughout the whole region of curvature he had found extensive degeneration of muscles, more marked on the convex side. The intervertebral cartilages on the concave side were totally destroyed. He concluded from this study that it was futile to expect to cure lateral curvature of the spine after changes in the bone had taken place. He was of the opinion that all the machines for forcible correction now in use are of but little value.

DR. E. H. BRADFORD, of Boston, insisted that there were certainly some cases in growing children that were benefited by treatment.

DR. L. A. WEIGEL said that he had frequently seen the most rigid muscles relax thoroughly after forcible correction, and even this degree of improvement was worth striving after.

DR. SHAFFER said he felt firmly convinced that lateral curvature of the spine is dependent primarily on changes in the muscles, though quite probably an underlying cause was to be found in the nervous system.

DR. H. AUGUSTUS WILSON, of Philadelphia, suggested that lateral curvature might sometimes result from an asymmetrical hip action in apparently normal subjects.

DR. PHELPS replied that only the physiological curve could be cured. It was not necessary to do myotomy in mild cases in young children, yet at the present time he was cutting more than one-third of his cases of lateral curvature.

DR. A. B. JUDSON spoke in admiration of Dr. Lovett's ingenious and convincing model, and added that in 1876 he had himself advocated, and in one case practised, the application of a spinal brace for the production of extreme lordosis in cases of lateral curvature, on the ground that as in rotation the anterior part of the column was affected by deviation from the median line, it was good practice to shift the weight of the body from the anterior to the posterior part of the column. Had he then looked as far ahead as Dr. Lovett had done, he would, in all probability, have thought even more favorably of the method. He now believed that it promised many advantages.

ANTERIOR SUPPORT SUPPLEMENTING THE TAYLOR BRACE IN POTT'S DISEASE.

DR. GEORGE B. PACKARD, of Denver, the author of this communication, spoke of the advantages of anterior support, and the carrying forward of the ribs which resulted from the sinking forward of the upper dorsal spine.

A SUSPENSION PRESSURE CHAIR FOR SCOLIOSIS.

DR. PHILIP HOFFMANN, of St. Louis, described this inexpensive apparatus. It is the pressure chair described by Dr. Bradford, to which has been added lateral steel bars, four feet and a half high, which meet in an arch overhead. To the arch is attached an apparatus consisting of a system of compound pulleys. It is intended as an accessory gymnastic apparatus.

RESULTS OF TREATMENT OF CONGENITAL DISLOCATION OF THE HIP.

DR. E. H. BRADFORD, of Boston, made some remarks on this subject, and presented a pathological specimen illustrating both the operative and the bloodless method of effecting reduction. He advocated exposing and incising the portion of the capsule which covers the acetabulum, and thus constitutes one of the obstacles to successful treatment. By suture of the capsule after reduction one could, in a large measure, prevent relapse.

DR. GIBNEY heartily commended his suggestion.

DR. RIDLON thought it was possible in young patients in whom the head and neck of the femur were fairly developed, to replace the bone by the bloodless method, but in order to get a permanently good result it was necessary to make and maintain considerable abduction. Failure was not infrequently due to a neglect to prevent flexion of the leg.

DR. HARRY SHERMAN, of San Francisco, said that he had tried, in one or two instances, Dr. Bradford's method of suturing, but had become convinced that if the head were placed in between the two lateral halves of the pocket, it would be quite as stable as if it had been sutured. This pocket was a very definite obstacle which could be appreciated in an open operation.

DR. BRADFORD said that he had seen a few cases that had relapsed after a year. He characterized the bloodless method as one which sacrificed precision to the timidity of the patient. Before operating by the cutting operation all the contractions of the soft parts should be overcome, either by stretching or by open incision and myotomy. He did not feel that he could operate successfully on patients over six years old.

A NEW BACK BRACE FOR POTT'S DISEASE.

DR. JOHN DANE, of Boston, exhibited this brace, the object of which was to combine the advantages of a plaster-of-Paris jacket with those of an anteroposterior brace. The usual apron is dispensed with, and there is a high cross piece with straps passing around under the arms.

TENDON TRANSPLANTATION IN THE TREATMENT OF PARALYTIC DEFORMITIES.

DR. W. R. TOWNSEND, of New York, presented this paper. He declared that in many patients suffering from drop-wrist the function could be more or less restored by tendon transplantation. Among the cases cited was one of his own, a case of right hemiplegia, pes equinus and drop-wrist. Here the tendon had been shortened by lapping one portion over the other, fastening it by the method previously described by Dr. Joel E. Goldthwait.

A CASE OF CONGENITAL DISLOCATION OF THE SHOULDER, WITH RADIOGRAPH.

DR. JOHN L. PORTER, of Chicago, present by invitation, reported this case.

DR. JOEL E. GOLDTHWAIT approved of the method pursued by Dr. Townsend in his case, that is, going directly through the interosseous membrane, because in the foot where the anterior tendons had been made posterior tendons and carried around the leg the results had not been very satisfactory. In some of his own cases of tendon transplantation the results had been surprisingly good.

DR. WEIGEL thought it was absolutely essential in certain cases to completely divide the tendon, and cited a case in illustration.

DR. BRADFORD said that in some cases he had taken special pains not to completely divide the tendon, believing that this secured a more powerful muscle. He had operated on one hand by the method de-

scribed by Dr. Townsend, and when last seen the child seemed to have gained.

A CASE OF TUBERCULOSIS OF THE ASTRAGALUS WITH ANCHYLOSIS AND SUBSEQUENT AMPUTATION.

DR. V. P. GIBNEY, of New York, reported this case, occurring in a girl of sixteen who had sprained her ankle. At first the case had seemed to be one of synovial tuberculosis. She had been treated by braces for about twelve years, but had recently returned with extensive tuberculous disease of the astragalus. Removal of the astragalus had not proved sufficient, and, after consultation, the foot had been amputated. The specimens were exhibited.

DR. GOLDTHWAIT showed in this connection a water-color drawing of a case of excision of the knee, in which the tissues about this joint had been found infiltrated with tuberculous material, and some of the fringes hanging down two inches or more. No central tuberculosis could be detected.

(To be continued).

AMERICAN MEDICAL ASSOCIATION.

FIFTY-FIRST ANNUAL MEETING, HELD AT ATLANTIC CITY, N. J., JUNE 5–8, 1900.

GENERAL SESSIONS.

FIRST DAY.

THE general sessions of the American Medical Association were held in the Marine Hall of Young's Pier, DR. W. W. KEEN, of Philadelphia, presiding.

Governor Voorhees was to have delivered the first address, but was absent, and the Acting Governor of the State and President of the State Senate, HON. H. M. JOHNSON, welcomed the Association. MAYOR H. P. STOY and DR. THOMAS S. REED, of Atlantic City, also made brief addresses of welcome.

DR. PHILIP MARVEL, of Atlantic City, read the report of the Committee of Arrangements, and DR. WM. J. HERDMAN, of Ann Arbor, Mich., in his report of the General Business Committee, presented several resolutions relating to the workings of the Association, which were adopted. The text of the Annual Address of the President of the Association, DR. W. W. KEEN, which was delivered at this time, appeared in the last issue of the JOURNAL.

The report of the Treasurer, DR. HENRY P. NEWMAN, of Chicago, showed a gratifying increase in membership and receipts. The receipts for the year ending December 31, 1899, were over $39,000. The cash now on hand amounts to $13,556.56, and this, together with a loan of $3,000 and $10,000 in Government bonds, gives a total of assets of $27,396.86.

The Secretary, DR. GEO. H. SIMMONS, of Chicago, reported that a copy of the Code of Ethics had been given to every medical student graduated this year. He recommended the general adoption of the metric system. A letter from the Secretary of the Wayne County (Mich.) Medical Society, urging interstate reciprocity in the matter of licenses to practise medicine, was read.

DR. U. O. B. WINGATE, of Milwaukee, reported for the Committee on Department of Public Health, that the main work of the Committee had been in reference to quarantine regulations and legislation.

DR. H. L. E. JOHNSON, of Washington, D. C., reported for the Committee on National Legislation, mentioning a number of bills recently presented to Congress, which the Committee had favored.

DR. E. ELIOT HARRIS reported for the Special Committee on Revision of the Constitution and By-Laws.

DR. REYNOLDS, of Kentucky, made a motion that two members from each of the various sections and the army and navy corps be appointed for the third Pan-American Medical Congress, to be held in Cuba this year.

By resolution offered by DR. WM. J. HERDMAN, and adopted, the name of the General Business Committee was changed to General Executive Committee.

DR. EDWARD JACKSON, of Denver, Col., was elected on the Committee of Prize Essays for ensuing year. The Executive Committee urged a decrease in the number of papers on section programmes, which are often so overcrowded.

After some further routine business and announcements the meeting adjourned.

SECOND DAY.

DR. W. L. RODMAN, of Philadelphia, delivered the

ORATION ON SURGERY.

The text of this appeared in the last issue.

DR. VICTOR C. VAUGHAN, of Michigan, delivered the

ORATION ON STATE MEDICINE.

After the report of the General Executive Committee, DR. T. J. HAPPEL, of Tennessee, read the report of the Board of Trustees. This report showed the finances of the Association to be in an excellent condition. The receipts for the year ended December 31, 1899, were $109,115.33; the total expenditures were $93,609.40, of which $77,641.01 was for the Journal of the Association. The total amount invested in United States bonds and the Indianapolis loan is $13,812.50, and the total cash on hand is $14,355.51, making an aggregate of $28,168.01 in the Treasurer's hands January 1, 1900. Recent expenditures leave a real balance at present of $4,131.36 available for debts.

The report of the Committee on the American Medical Association Medal was read by DR. GEORGE M. GOULD, of Philadelphia. Six essays were submitted to the Committee, and the one recommended by the Committee was entitled "Quantitative Tests for Proteolysis," by A. L. Benedict, A.M., M.D., of Buffalo, N. Y. The Association accepted the Committee's report. Dr. Jackson was appointed on the Committee for the ensuing year.

The report of the award of the N. Senn gold medal was next read by DR. W. S. RODMAN, of Philadelphia. The winner was the author of the essay entitled "Exstrophy of the Bladder," by Dr. F. Frederick Connell, of Chicago.

The Committee on the Reorganization of the Army and Navy Medical Corps, of which Dr. Thomas H. Fenton, of Philadelphia, is chairman, failed to report.

DR. J. C. WILSON, of Philadelphia, chairman of the Rush Fund, reported new contributions during the year, from various medical societies, of $938.01,

and a total on hand of $11,330.05. After the report of special committees, and the transaction of miscellaneous business, the meeting adjourned.

THIRD DAY.

After reading of the minutes and announcements by DR. MARVEL, of the Committee of Arrangements, DR. J. M. ALLEN, the Third Vice-President, took the chair. DR. JOHN A. WITHERSPOON, of Nashville, Tenn., delivered the "Oration on Medicine."

The Secretary of the General Executive Committee next reported.

The resolution of DR. L. B. TUCKERMAN, that the National Legislative Committee, in conjunction with the Special Committee on the Reorganization of the Army and Navy Medical Corps, cause to be drafted a bill providing for adequate instruction in hygiene and sanitation in the national military and naval academies, was adopted.

The matter of selecting a place of meeting for next year was referred to the General Executive Committee.

The recommendation that the prize medal be open for competition to members of the Association only was adopted.

The Committee endorsed the action of the Prize Medal Committee, and accepted the medal offered as a model for future medals. It was resolved to appropriate $500 annually for the encouragement of scientific research, provided no one individual prize exceed $100.

The name of the Section on Neurology and Medical Jurisprudence was changed to Section on Nervous and Mental Diseases.

DR, STONE, of Minnesota, read the

REPORT OF THE NOMINATING COMMITTEE.

It was unanimously adopted, and the following officers were declared elected for the ensuing year:

President, Dr. Charles A. L. Reed, of Ohio; First Vice-President, Dr. A. W. Calhoun, of Georgia; Second Vice-President, Colonel Woodhull, of Maryland, U. S. Navy; Third Vice-President, Dr. Philip Marvel, of New Jersey; Fourth Vice-President, Dr. W. E. Quine, of Illinois; Treasurer, Dr. Henry P. Newman, of Illinois; Secretary, Dr. Geo. H. Simmons, of Illinois; Assistant Secretary, Dr. Wm. Davis, of St. Paul; Librarian, Dr. Geo. Webster, of Illinois.

Board of Trustees. — Dr. Miles F. Porter, of Indiana; Dr. E. Fletcher Ingals, of Illinois; Dr. W. L. Rodman, of Pennsylvania; to fill the vacancy caused by the resignation of Dr. Charles A. L. Reed, Dr. James M. Matthews, of Kentucky.

Judicial Council.— Dr. James R. Guthrie, of Iowa; Dr. G. B. Gillespie, of Tennessee; Dr. R. C. Moore, of Nebraska: Dr. Ida J. Heiberger, of District of Columbia; Dr. John B. Roberts, of Pennsylvania: Dr. Charles L. Rodman, of Connecticut; Dr. L. L. Jepson, of West Virginia.

The Address on Surgery. — Dr. John A. Wyeth, of New York.

The Address on State Medicine. — Dr. John M. Kober, of the District of Columbia.

The Address on Medicine. — Dr. N. S. Davis, Jr., of Illinois.

Place of Meeting. — St. Paul, Minn.

Committee of Arrangements. — Dr. John F. Fulton, Chairman, of St. Paul.

The newly-elected President, DR. REED, having been called away by telegram, was now installed, and made a short address of acceptance. The special committees followed. The Committee on Revision of Constitution and By-Laws reported. The resolution that men graduating from four-year medical schools only should be eligible for membership to the Association after 1901 was adopted. Under miscellaneous business Dr. Denslow Lewis, of Chicago, brought before the Association the matter of the publication of his paper, read at Columbus last year, and made a motion that the Association should vote a special order for its publication in the *Journal of the American Medical Association.* The matter was referred to the General Executive Committee to be reported Friday.

FOURTH DAY.

After the reading of the minutes of Thursday's session, and report of the Committee of Arrangements, the elections of officers of sections was announced as follows:

Diseases of Children. — Chairman, Samuel W. Kelley, Cleveland; Secretary, William E. Darnell, Atlantic City.

Diseases of Women. — Chairman, Harry P. Neuman, Chicago; Secretary, C. S. Bonnifield, Cincinnati.

Surgical. — Chairman, A. J. Ochsner, Chicago; Secretary, Martin B. Tinker, Philadelphia.

Neurology. — Chairman, W. P. Tomlinson, St. Peter, Minn.; Secretary, F. S. Pearce, Philadelphia.

Ophthalmology. — Chairman, J. A. Lippincott, Pittsburg, Pa.; Secretary, E. C. Ellett, Memphis, Tenn.

Materia Medica. — Chairman, N. S. Davis, Jr., Chicago; Secretary, J. N. Upshur, Richmond.

Laryngology. — Chairman, John Nahand Mackenzie, Baltimore; Secretary, George C. Stout, Philadelphia.

Cutaneous Medicine. — Chairman, W. L. Baum, Chicago; Secretary, R. R. Campbell, Chicago.

Stomatology. — Chairman, R. R. Andrews, Cambridge, Mass.; Secretary, Eugene S. Talbot, Chicago.

Practice of Medicine. — Chairman, J. M. Anders, Philadelphia; Secretary, W. Britt, Philadelphia.

Business Committee. — A. E. Baldwin, Chicago; G. V. I. Brown, Milwaukee; M. H. Fletcher, Cincinnati.

Physiology and Dietetics. — Chairman, Elmer Lea, New York City; Secretary, R. Harvey Cook, Oxford, O.

State Medicine. — Chairman, Ernest Wende, Buffalo, N. Y.; Secretary, J. H. Hurty, Indianapolis, Ind.

DR. DENSLOW LEWIS, of Chicago, brought up the matter of the publication of his article on "Gynecologic Consideration of the Sexual Act." The Executive Committee reported against the publication of the article, which report, after considerable discussion, was adopted. The Committee also reported in favor of continuing the pathologic exhibit from year to year, under charge of the newly-formed pathologic section, and that $500 be appropriated for the exhibit. The resolution was adopted.

The pathologic exhibit was one of the features of the meeting. It comprised over 1,500 specimens and photographs, under the direction of Dr. Frank B.

Wynn, of Indianapolis, secretary of the unofficial committee on pathologic exhibit, and of the provisional pathologic section. The idea originated three years ago with the Indiana State Medical Society, and was this year, for the first time, made part of the work of the Convention, though unofficially, and will hereafter be a permanent part of the work, under the newly-formed pathologic section. The exhibition is intended as a practical, interesting and instructive object lesson to the members of the Association, and embraces a large number of specimens of almost every pathologic condition. The chief features were the collection of gross specimens of the lungs, heart, liver, kidneys, intestines, etc.; the 95 specimens of diseased meats, showing trichinosis, actinomycosis, cholera, etc.; and a large collection of photographs and skiagraphs, the microscopic and bacteriologic exhibit, and the sanitary exhibit of the Marine Hospital. The specimens were furnished by colleges and specialists from all over the country.

The work of the National Committee on Legislation was approved. This committee has recommended a number of bills lately before the Senate, and suggested a number of new bills regarding national medical affairs.

Section on Surgery and Anatomy.

FIRST DAY.

The meeting was called to order by the Chairman, Dr. H. O. Walker, of Detroit, who delivered the Annual Address, entitled

A RETROSPECT OF SURGERY OF THE STOMACH.

In the two decades since Billroth gave the first impetus to gastric surgery great progress has been made. Operative measures may be divided into two great classes: those for benign affections and those for malignant disease. Among the benign affections was mentioned stenosis of the pylorus. For the relief of this condition he prefers the operation of pyloroplasty, provided the pylorus is not greatly hypertrophied or bound down by adhesions; in such cases gastro-enterostomy is the operation of choice. For the relief of gastroptosis the operation of gastroplication has given good results; operations shortening the ligaments are of double value; gastropexy may be indicated in certain cases. He has operated in two cases for hour-glass contraction of the stomach. The first patient was a woman of thirty-seven who had suffered with digestive difficulties; a tumor could be felt in the epigastric region. On opening the abdomen a constriction was found near the middle of the stomach giving it an hour-glass form. Partial resection was performed. The patient died on the seventh day following operation. Partial resection was performed on a man of fifty-seven for the relief of a similar condition; death followed on the fifth day from giving way of the sutures. Early diagnosis is highly important in the case of malignant disease, and the stomach specialists have given surgeons much aid in this respect of late years. Pylorectomy is advocated in the case of freely movable tumors. Dr. Walker has previously reported a successful pylorectomy; in two other cases his patients died as a result of the operation. If the disease is more extensive gastro-enterostomy is indicated. He has used Senn's plates, Murphy's button, and simple suture with equally good results. The mortality of this operation has been growing less. In the preparation for operation he advises preliminary free purgation, careful attention to asepsis and care in manipulation. It is better to ligate first and then cut than to cut and then ligate, as is the usual custom; the approximating sutures should not be drawn too tight so as to cause death of the tissues. The operation of total gastrectomy is yet under judgment. He has experimented with the operation on dogs. Of 12 operated upon one died on the table and the others died in from three to forty-eight hours after the operation; two from sepis and nine from hemorrhage and shock. In closing Dr. Walker advised exploratory operation in all obscure cases.

Dr. W. L. Rodman, of Philadelphia, read a paper entitled

NON-PERFORATING GASTRIC ULCER WITH AND WITHOUT HEMORRHAGE.[1]

Dr. Turck, of Chicago, mentioned the spasmodic contraction of the pylorus which may occur specially with hyperchlorhdria as a form of pyloric obstruction in which operation is not indicated. In gastric myesthenia medical means may fail to restore muscular power. Accumulation of mucus which decomposes and causes septic conditions may occur. The pyloric sound was mentioned as a means for more exact diagnosis. X-ray photographs were shown showing that the sound had passed through the pylorus into the intestine. The general condition of the patient is not alway thought of in considering the contraindications for operation; this is the reason why many patients die four or five days after operation from such causes as renal insufficiency or auto-intoxication. The importance of skill and perfected technic on the part of the surgeon was emphasized.

Dr. Fenger, of Chicago, thought that he had discovered a method to avoid the constant vomiting which often follows gastro-enterostomy, but vomiting occurred in the fourth patient operated upon by this method, and he finds himself as far from this desirable result as ever. Instead of presenting a paper on this subject, as he originally intended, he demonstrated from a series of drawings the position of the palate, epiglottis, etc., during anesthesia. In certain cases in which there is danger of suffocation from the tongue falling back he passes a silk thread around the hyoid bone with which to draw it forward, and he showed that this would give more room for breathing than any other method.

THE DIAGNOSIS AND TREATMENT OF CHOLELITHIASIS.

Dr. W. J. Means, of Columbus, O., reported 20 cases that had come under his observation in which the diagnosis of cholelithiasis was made. He operated in 10 of these cases without any mortality. Death resulted in three of the 10 remaining cases in which operation was not performed. Gall-stones were found at the time of operation in every case but one. In four cases the affection followed typhoid fever. The importance of the following symptoms was emphasized: pain, nausea and vomiting, jaundice, clay-colored stools, high-colored urine, pruritus and tenderness over the gall-bladder. In making the diagnosis it should not be forgotten that the disease almost always occurs in patients over thirty years old. Operation in uncomplicated cases is almost free from danger and

[1] See No. 23, page 586, of the Journal.

Dr. Means believes that early operation will reduce the mortality almost as much as early operation for appendicitis.

CHOLECYSTECTOMY WITH SPECIAL REFERENCE TO REMOVAL OF THE MUCOUS MEMBRANE OF THE GALL-BLADDER IN CERTAIN CASES AS A SUBSTITUTE.

DR. W. J. MAYO, of Rochester, Minn., read this paper. Total removal of the gall-bladder is indicated in most cases of severe traumatic injury, gangrene, phlegmonous processes and in malignant disease. In cases of chronic suppuration or prolonged mucous discharge he recommends removal of the mucous membrane as a substitute for cholecystectomy. The operation is easily performed, it is less dangerous and the results in seven cases which he has operated upon by this method are excellent. The method of operating in cases in which the gall-bladder has been previously drained was also given.

THE IMPORTANCE OF EARLY OPERATION FOR BILIARY CALCULI.

DR. M. H. RICHARDSON, of Boston, read this paper. He believes that gall-stones should be removed by operation as soon as the diagnosis is reasonably certain, unless some lesion of some other organ of the body makes operation more hazardous than leaving the stones. His own experience has led him more and more to favor early operation. Early operation is attended by almost no mortality; it is but little more dangerous than the operation for appendicitis in the interval. The dangerous cases are those in which cholemia is present; in these cases the danger is as great as in operating for acute appendicitis. He has had 13 deaths and about 100 recoveries following operations on the biliary passages; in but few cases was the operation undertaken early in the attack. All his operations on the common duct were successful. In one case death followed later from malignant disease of the liver. The frequency with which malignant disease of the liver follows inflammatory affections seems to favor early operation. He gave brief notes of his fatal cases. All the patients had suffered from the prolonged mechanical effects of gall-stones; in many cases operation was undertaken as a forlorn hope; in others there were severe complicating diseases; several of the patients were of an advanced age. Among conditions indicating operation are mentioned: a single attack of biliary colic in case a facetted stone appears in the stools (if the stone be smooth operation is not indicated); successive attacks of colic even if of moderate severity.

DR. WYETH, of New York, endorsed Dr. Richardson's views entirely.

DR. MYNTER, of Buffalo, commended Dr. Richardson for calling attention to his fatal cases; these cases are often the most instructive. He mentioned a case in which he removed 565 stones from the gall-bladder. One of his patients died from capillary hemorrhage; one died after operation on the common duct. Jaundice is not as important a symptom as some speakers would lead us to believe; it does not appear while stones remain in the gall-bladder, but only when they are being passed. Dr. Mynter considers intermittent pain and tenderness the most important symptoms, and when these are present he operates. As illustrating the difficulties of diagnosis he mentioned two cases: in one of these he operated for appendicitis and found the gall-bladder distended with stones; in the second case he operated for gall-stones and found the inflamed appendix adherent to the gall-bladder.

DR. SENN, of Chicago, believes that in the x-rays, in the hands of experts, we have a certain means of diagnosis of gall-stones. Dr. Senn considers the removal of the mucous membrane of the gall-bladder, as suggested by Mayo, difficult to accomplish, and infected mucous membrane is likely to be left behind. He protests against the extreme views that had been presented with regard to operation in all cases of gall-stones as soon as the diagnosis is made, and believes that we should operate only in cases in which there is danger to life from the symptoms caused by stone.

DR. GRAY, of Jersey City, reported an operation for the removal of several large stones.

DR. MARCY, of Boston, mentioned a case in which biliary colic had recurred three years after operation, and a gall-stone was passed in the stools. He favors Dr. Richardson's views as to early operations. In doubtful cases surgeons fail in performing their duty by not operating.

DR. DEAVER, of Philadelphia, believes that ultra-conservatism is a dangerous doctrine; late operation will not save lives. He has never yet been successful in diagnosing gall-stones by means of the x-rays. In uncomplicated cases he finds operations on the gall-passages easy.

DR. WYMAN, of Detroit, believes that the remedial power in cholecystostomy is not generally appreciated.

DR. RICKETTS, of Cincinnati, approves of all that Richardson said as regards early operation. The early operation is usually one of the easiest in surgery; late operation with a contracted gall-bladder is one of the most difficult.

DR. OCHSNER, of Chicago: In every case of death mentioned the fatal result was due, not to the operation, but to the delay. Early operation is comparatively harmless, because practically extraperitoneal, and because the contents of the gall-bladder are aseptic. Symptoms referred to the stomach are among the earliest usually mentioned. Mayo's operation of the mucous membrane is theoretically difficult but practically very easy, and gives satisfactory results.

DR. BEVAN, of Chicago, does not agree that all cases should be subjected to operation as soon as a diagnosis is made. In his dissecting-room experience he found gall-stones in 16 per cent. of all subjects, and in the post-mortem room stones are found in 25 per cent. of the patients over sixty years old, yet by no means all of these needed operation for gall-stones.

DR. GRANT, of Louisville, considers it unwise to operate for conditions which are producing no symptoms. He has not found the x-rays of any value in diagnosis.

DR. SUMMERS, of Omaha, Neb., advises passing the finger through the foramen of Winslow when using the Murphy button.

DR. MEANS, in closing, stated that he had found the x-rays of no help in cases in which the presence of stone was later demonstrated at the post-mortem or at operation. He does not agree with the ultra-conservative views that were expressed, and does not believe that stones exist any considerable length of time without producing symptoms.

DR. MAYO stated that he did not advocate operation in two stages, as some had understood him, but removes the mucous membrane from the bladder in cases in which cholecystotomy has failed to cure.

DR. RICHARDSON believes that there is too great a tendency to conservatism among most practitioners; they do not bring their cases to the surgeon until too late to be benefited, and it is necessary to call attention to the need for earlier intervention.

SECOND DAY.

THE PRESENT STATUS OF THE MURPHY BUTTON,

by J. B. MURPHY, of Chicago. In Dr. Murphy's absence his paper was read by DR. EVANS. It is now eight years since the anastomosis button was first used in operating on a human being. Murphy states that he has been so frequently misquoted and misunderstood, and the button has been so frequently improperly constructed and incorrectly used that it is time to consider the actual results which have been attained. Up to April 1, 1900, one of Murphy's assistants has collected 1,620 cases in which the button has been used, not including 111 cases collected by Murphy in 1895. The mortality has been reduced to 20 per cent., and should not be over 10 per cent. Seven hundred cases of gastro-enterostomy by Murphy's button have been collected, with a mortality of 19 per cent.: in 166 non-malignant cases there were 97.7 per cent. of recoveries. Entero-enterostomy has been performed in 750 cases, with a mortality of about 19 per cent., and in non-malignant cases it has been only 14.4 per cent. In no cases is the button of greater value than in cases of strangulation and gangrene requiring resection. Cholecystenterostomy had been performed in but 11 cases previous to the invention of the button, and it was primarily devised for use in this operation. Of late years he has used the button only in cases of irremovable obstruction, but probably it might better be used in many other cases rather than to undertake more extensive operative measures. Considering the fact that operations have been performed in all parts of the world, in many cases by unskilful operators, often in the case of patients *in extremis* and with imperfectly constructed buttons, it is strange that the results are so good as they are.

A historical review was then given of the various mechanical devices which were in use previous to the discovery of the button. Among the advantages of the use of the button which were mentioned were the fact that sutures are not needed, which shortens the time of operation, the ideal approximation which is obtained, the fact that cicatricial contraction is less likely to occur than after other methods, and that the physiologic function of the intestine is not interfered with. To use the button successfully a considerable knowledge of surgery is necessary, and most of the unfavorable results are from lack of skill of the operator. The objections to the use of the button are the danger of the opening becoming occluded, and that it may be retained for a long time. In all the cases collected but 11 cases of occlusion are reported, with only three deaths. This danger may be easily avoided by careful attention to diet. In many cases in which it has been thought that the button was not passed it has been found later not to be in the body, even in some cases in which operations were undertaken for its removal.

COLOSTOMY FOR PERMANENT FECAL FISTULA.

DR. J. A. WYETH, of New York, described a method of operating for a thorough understanding of which the drawing that was presented would be necessary. The essential feature is the pulling up of the slack of intestine formed by the sigmoid flexure from below to the region above the point at which it is desired to form the artificial anus. This gives storage room for fecal matter, so that it may be retained for some time, and that the patient will not be troubled with incontinence of feces.

THE TREATMENT OF OBSTINATE CONSTIPATION BASED ON NEW POINTS IN THE ANATOMY AND HISTOLOGY OF THE RECTUM AND COLON.

DR. J. R. PENNINGTON, of Chicago, discussed the anatomy of the sigmoid flexure and rectum at some length and demonstrated a large number of carefully prepared specimens and drawings illustrating the points brought out in his paper. He showed that the sigmoid flexure is not confined to the left iliac fossa, as is usually stated in text-books, but it may occupy the pelvis or extend into the right iliac fossa. The results of a series of careful histologic examinations by Dr. Evans, of the University of Illinois, of numerous specimens of the rectal valves were given. These examinations show that the valves may contain mucosa, muscular layer and serous coat, or only part of the normal intestinal wall may be present. An abnormal position of the sigmoid flexure or large rectal valves may give rise to constipation. To relieve this, Pennington has divided the valve with a knife, in one case with resulting peritonitis; he has also used the cautery and the results were not entirely satisfactory. He called attention to an instrument which he calls the valve clip, designed to cut a section out of the valve, and demonstrated a table which is a modification of one devised by Martin.

DR. TUTTLE, of New York, mentioned five cases in which Murphy's button had not been observed to pass, but no harm had resulted. He criticised Wyeth for using the term fistula, and considers the term artificial anus more suitable to designate fistulas established by operative measures. He believes that in his method Wyeth has struck the keynote in preventing constant and uncontrollable fecal discharge. Tuttle commends Pennington's work.

DR. FINLAYSON, of Iowa, reported a case of obstinate constipation in which he found the sigmoid flexure entirely on the right side.

DR. MARTIN, of Cleveland, stated that six years ago he made the researches and employed the methods reported by Pennington as his original work. Nelaton in 1850 and Jacobi in 1862 called attention to the fact that the sigmoid flexure may be located on the right side. Most cases of stricture of the rectum are really hypertrophy of the rectal valve. All cases of idiopathic dilatation of the colon should be examined carefully to make certain that they do not arise from this cause. There is no danger in valvotomy if the proctoscope is used, for then we can see what we are doing.

DR. PENNINGTON, in closing, expressed the belief that operation as proposed by Martin is dangerous.

REPAIR AFTER RESECTION OF THE INTESTINE.

DR. W. A. EVANS, of Chicago: The fact that no cases of stricture are reported following operation, in

view of the numerous operations of the past ten years, seems good evidence that such trouble is unusual. Evans has found the amount of scar tissue that results from such operation to be unusually small; the fibres which give rise to stricture are circular, and these circular fibres are not found in the connective tissue. This is probably due to the fact that in scar tissue the fibres form in the direction of the tension. In cases operated upon some time previously it is difficult to even find the site of anastomosis. We may conclude from these studies that the dangers of stricture are not great enough to make it necessary for us to consider some other procedure as a substitute for end-to-end anastomosis.

DR. WIGGIN, of New York, in his experience has found no difficulty as to stricture following end-to-end anastomosis and he prefers this method of operating. In experiments on animals he has found it difficult to locate the site of union. He prefers to use horsehair as a suture material, as it is elastic and prevents bad results which may result from swelling. Evans in closing stated that in a number of text-books the dangers of stricture following end-to-end anastomosis are emphasized, and this led him to make this series of investigations. The dangers are certainly not great.

APPENDICITIS; COLITIS AS AN ETIOLOGIC FACTOR; THE QUESTION OF REMOVAL OF THE APPENDIX IN ALL CASES OPERATED UPON.

DR. MILES S. PORTER, of Fort Wayne, Ind., mentioned a case in which appendicitis began with colitis and stated that since then he had seen a number of other cases in which the appendicitis seemed to take its origin in an inflammatory condition in the colon. He believes that a knowledge of this etiologic relation is important as to the prophylaxis of certain cases of appendicitis. In certain cases of appendicitis the patients, if subjected to excision of the appendix, will die, but if simply incision and drainage is practised they will recover. The number of cases of recurrence after incision and drainage without removal of the appendix is comparatively small.

APPENDICEAL FISTULA.

DR. J. B. DEAVER, of Philadelphia, read this paper. He considers fistula one of the most important sequels of appendicitis. Such fistulas are of two types, external and internal. External fistulas are of two kinds: those leading to abscess cavities which are only suppurating sinews and tend to spontaneous recovery, and those communicating with the lumen of the intestine in which there is fecal discharge. Internal fistulas communicate with some of the surrounding viscera. Among the causes mentioned were the cutting out of sutures, particularly in cases in which the cecum is much inflamed, the continued use of the drainage tube, and particularly a gangrenous condition in cases in which operation has been too long postponed. He believes that many cases of perinephritic abscess arise from abscess of the appendix behind the colon. He mentioned cases in which he had found appendiceal abscesses emptying into the lung, the bladder and the ureter. The most favorable internal fistulas are those which break into the ascending colon or cecum. The treatment of these cases will vary with condition of the patient. As a rule they close spontaneously; they should be kept clean, irritation by syringing, etc., should be avoided and if they persist, operation should be performed. If an abscess cavity is present the mouth of the sinus should be opened widely, in some cases it may be scraped, and it should be packed with gauze. For the cure of internal fistula it may be necessary to open the peritoneum, and remove the appendix; in some cases resection and end-to-end suture must be performed. Great stress was laid on importance of the avoidance of fistula by early operation.

DR. SENN, of Chicago, has seen more fistulas following operation than without operation, and he does not believe in operation as a preventive of fistula. Operation in all cases as soon as a diagnosis is made is extreme, and extremes in surgery are dangerous. Ordinary expectant treatment will bring about recovery in 80 per cent. of all cases of appendicitis. The operation for fistula is usually dangerous and he is conservative about advising it in such cases in which it seems probable from the history that the fistula leads into the cecum.

DR. M. PRICE, of Philadelphia, endorses Dr. Deaver's views. In 125 operations performed as soon as the diagnosis was made he found pus in all but two cases. He advises the use of gauze instead of a tube for drainage. The statement that 80 per cent. of all cases recover without operation he believes incorrect and dangerous.

DR. DAWBARN, of New York, entirely agrees with Dr. Deaver that we cannot be too radical in dealing with the appendix. It is so generally possible to prevent fistula that when it occurs it may be usually ascribed to faulty technic. He advises the insertion of a purse-string suture about necrotic areas in the cecum which seem likely to give rise to fistulas.

DR. HAMILTON, of Columbus, believes that most fistulas will recover if a nourishing liquid diet and tonics are given together with massage and care as to cleanliness.

DR. MYNTER, of Buffalo, favors the position taken by Dr. Deaver. When pathologic conditions are present such as are found in appendicitis medical treatment can do no good. He agrees with Dr. Porter that in the case of large abscesses after the fifth day it is best simply to incise and drain. He has found periphlebitis a more important sequel of appendicitis than fistula.

DR. KEEN, of Philadelphia, called attention to the discussion on the subject of appendicitis which occurred at the meeting of the American Surgical Association thirteen months ago. Two questions were considered: Shall all cases of appendicitis be operated upon as soon as the diagnosis is made? And shall we remove the appendix in every case? Both of the questions were decided in the negative by all present, except Drs. Deaver and Hart. In 300 necropsies on patients that had died from causes other than appendicitis Dr. Hektoen found that the appendix had been at some time inflamed in 100 cases, yet these recovered and died from other causes. Each case of appendicitis should be considered by itself, and not only the condition of the patient, but the skill of the surgeon who is to operate should be considered. A surgeon who operates only once in three months should not undertake it unless absolutely demanded. As general rules may be stated that no case should pass the second attack without operation; all cases of considerable gravity should be operated upon and in most cases

the appendix should be removed. It is rare that fecal fistula does not heal spontaneously. In operating for fistula Dr. Keen usually makes the abdominal opening at one side of the fistula, excises, inverts, closes with Lembert sutures, and packs with gauze.

Dr. McRae, of Atlanta, said probably in 75 per cent. of all cases recurrence follows if the appendix is not removed. To break up adhesions in every case in which suppuration is present, as suggested by Price, he believes is dangerous. In operations during acute attacks he considers the greatest danger to be ventral hernia, and not fistula, as stated by Deaver. Most fistulas close spontaneously. Gauze drainage he prefers to use of the tube.

Dr. Murphy, of Chicago, congratulated Deaver on his successes in repairing the defective work of others and his labors to prevent such defective work. Granting that 80 per cent. of all patients with appendicitis recover without operation, the results are not as good as after early operation, for probably all but about two per cent. recover from such operations. This is a saving of 18 per cent. of lives over the conservative methods of treatment. The diagnosis is easy in every case within twenty-four hours, and there are few towns so small that good surgical skill is not available within a few hours. The mortality of early operation is probably not over one per cent. and that is from primary perforative peritonitis. Dr. Murphy has not lost a case that was operated on within the first twenty-four hours. He believes that we should refuse operation in those cases in which suppurative peritonitis is present; the responsibility for death should then rest with the physician who has allowed the patient to reach such a condition.

Dr. Gray, of Jersey City, believes in operation as soon as a diagnosis is made. Any surgeon with common sense and ordinary skill can perform the operation. He pleads for operation in cases of general peritonitis; we should eviscerate on hot towels, sponge the intestines, peel off patches of adherent lymph, wash with salt solution and drain freely in such cases. He has saved a number of patients by such treatment.

Dr. Hall, of Cincinnati, believes that we should give the desperate cases a chance.

Dr. Bolt, of New York, operates upon every case, if not moribund. If there is recovery from the first attack there is danger of a second attack, and danger from immediate perforation.

Dr. Fenger, of Chicago, considers the question of first importance, "How shall we get the patient out of the attack alive?" This is not always best accomplished by operation. Operation in the interval is safest, hence it is best not to operate as soon as the diagnosis is made, if there seems to be a possibility of recovery from the attack. The patient is put in a hospital and carefully watched, and if the symptoms increase in severity operation is performed.

Dr. Ashton, of Philadelphia, agrees with Deaver as to the advisability of early operation; it is never possible to tell what the patient's condition will be the next day.

Dr. Laplace, of Philadelphia, thought the mortality too high in appendicitis; every case could be saved at some stage by operation, and this is usually early in the attack. It is never possible to tell whether the infection is caused by a mild or virulent germ, and the only safety lies in early operation.

Dr. Ochsner, of Chicago, advises withholding absolutely all food and cathartics, thus avoiding nearly all peristalsis, which tends to pull away the protecting omentum. If this treatment is followed abscess formation will not occur in some cases, and if it does occur it will be localized and readily successfully treated. The mortality of operations during the interval is much less than if performed during the attack.

Dr. Porter, in closing the discussion, stated that he is absolutely opposed to breaking up adhesions in case of abscess formation as suggested by Price. He does not believe that recurrent attacks follow in 75 per cent. of the cases in case the appendix is left. Murphy gave a wrong impression when he stated that he would not operate in case of septic peritonitis. We should give every man a chance for recovery, no matter how desperate the case.

Dr. Deaver, in closing, stated that he was certain of only two things in connection with the subject of appendicitis: the method of making a diagnosis, and that all cases should be operated upon as soon as a diagnosis is made.

Officers. — The officers of the Section chosen for the ensuing year were: Chairman, Dr. A. J. Ochsner, of Chicago; Secretary, Dr. Martin B. Tinker, of Philadelphia.

(To be continued.)

Section on the Practice of Medicine.

FIRST DAY.

The Chairman, Dr. George Dock, of Ann Arbor, delivered the Chairman's Address.[1]

Dr. George M. Gould, of Philadelphia, read a paper entitled

A SYSTEM OF PERSONAL BIOLOGIC EXAMINATIONS THE CONDITION OF ADEQUATE MEDICAL AND SCIENTIFIC CONDUCT OF LIFE.

Dr. C. N. B. Camac, of New York, read a paper entitled

HOSPITAL AND WARD CLINICAL LABORATORIES.

Rarely is any one finding in medical science the open sesame to the secrets of disease. The clinical laboratory makes no claim other than that it may add its fraction to the whole in the estimation of the changes in disease processes. The workshop of the clinical diagnostician is the sick-room, the bedside, and the ward. Those who object to the establishment of clinical laboratories do so on one of the following grounds: (1) Diagnosis is satisfactorily made without these tests; (2) the laboratories require too much space. But it is found that an area of 6x6 feet or at most 10x10 feet is ample and all that is requisite is a table and a window. Gas and running water are helps; but the alcohol lamp and the ordinary wash-bottle can be made to do; (3) the cost of establishment and maintenance is too great. Three hundred dollars will fully equip one of these ward laboratories, including a microscope with an oil-immersion lens and a cabinet for instruments and reagents. This laboratory should be kept clean on account of its proximity to the beds of the patients. Fifty dollars per year is ample to cover the running expenses; (4) the tests require too much time and are too difficult. In order to overcome this objection internes should be appoin-

[1] See No. 23, page 581, of the Journal.

ted to all hospitals, whose sole duty it should be to attend to this side of ward work. Among the advantages of this method of laboratory work may be mentioned: (1) The increase in the number of competent observers that such routine work would develop; (2) the production of accuracy in diagnosis and in treatment; (3) the accurate taking of records. Such a method may, with profit, be applied to dispensaries. In this way clinical pathology will become the link between the clinician and the pathologist.

DR. M. HOWARD FUSSELL, of Philadelphia, read a paper entitled

EXAMINATION OF THE BLOOD, ITS VALUE TO THE GENERAL PRACTITIONER.

The vast majority of physicians do not make blood examinations unless they are suggested by the consultant. In some cases the blood examination is as important and in other cases it is more important than the examination of the urine, and it is already acknowledged that an examination of the urine is necessary in every case. As a general practitioner, the author examines the blood in all obscure cases. As a result of such an examination: (1) The physician will avoid administering iron to a patient because the face is pale, since all pale people are not anemic; (2) it will be found that patients with flushed faces often have decided reduction of the hemoglobin and of the number of red blood corpuscles; (3) patients with cardiac and pulmonary symptoms are sometimes diagnosed as cases of organic disease, when a blood examination would reveal chlorosis; (4) blood examination will positively indicate the presence or absence of malaria; (5) the diagnosis between leukemia and other organic conditions, such as tuberculosis and carcinoma of the stomach, may be made; (6) the blood examination combined with the Widal test will diagnose between typhoid fever and malaria, or, possibly, show a combination of the two diseases; (7) counting the leucocytes will often give satisfactory results in clearing up obscure conditions. The physician does not need to take a microscope to the bedside of the patient; if the diluting tube is surrounded by a rubber band the blood may be preserved for a long time and the counting done at leisure.

DR. WILLIAM OSLER, of Baltimore, said that he had been impressed by the value of the ward laboratories. They are essential to the hospital and to the dispensary. The benefit of a clinical laboratory to the patient in the dispensary, where the diagnosis should be made, is inestimable.

DR. SIMON FLEXNER, of Philadelphia, read a paper entitled

DYSENTERY.

The paper treated of the results of the study of cases of dysentery made in the army hospitals in Manila during the summer of 1899. The dysentery in the tropics does not conform to a single type. It is a mistake to think that tropical dysentery is always amebic in origin. Three groups of organisms have been thought to be the cause of the disease: (1) The pyogenic cocci; (2) the bacillus coli communis, and (3) the ameba coli. Amebic dysentery is not confined to the tropics, and the status of the ameba coli in the production of the disease has undergone a change because the organism can be found in the normal stools. Tropical dysenteries occur in which the ameba coli is not present. These cases are acute in character, lasting from six to eight days, or they may run into a chronic form. Secondary lesions, such as abscess of the lungs and liver, are rare. A bacillus was found in these cases which was not the bacillus coli communis. This organism is not found in the normal intestine and a blood serum from a patient with the acute form of the disease agglutinates a pure culture of the organism. In the early stages of the disease the organism is present in large numbers; but as the disease becomes more chronic it diminishes in number, and later may disappear entirely. The bacillus agrees with a micro-organism obtained from the stools of patients suffering from dysentery in Japan by Shiga, the bacillus dysenteriæ. The lesions of the acute form of dysentery are different from those of the ordinary amebic dysentery. Small animals may be rendered immune and animals that were immunized in November last are still alive. It seems to be possible to produce a preventive serum.

DR. JOHN H. MUSSER, of Philadelphia, read a

NOTE ON TROPICAL DYSENTERY.

A soldier, age thirty-two years, had been in Puerto Rico for fifteen months, and for eight months of that time had had dysentery. The disease was characterized by colitis and proctitis, prostration and emaciation, pigmentation of irregular degree but of uniform extent. The skin presented many boils and purpura was present. The stools contained no fresh blood and but little mucus. The mouth had the appearance of a malignant case of scorbutus. There was no periodicity in the intestinal symptoms. The blood of this patient agglutinated a pure culture of the bacillus of Shiga, which was brought by Dr. Flexner from Manila. The patient died and at autopsy it was found that the anatomic changes in the intestine were very slight.

DR. WILLIAM OSLER, of Baltimore, had also seen a case in the person of a soldier from Puerto Rico. The blood of this patient also agglutinated the bacillus of Shiga. An attempt was made to agglutinate this organism with blood serum from cases of amebic dysentery without result. This seems to indicate that there are two types of dysentery. He thought that the epidemic of dysentery that is at present raging in Japan might be like those epidemics that are seen in jails and hospitals in this country occasionally.

DR. NORMAN BRIDGE, of Los Angeles, asked Dr. Flexner whether typhoid fever might not occur coincidentally with this form of dysentery. Or, if this does not occur, will the blood of the dysentric patient agglutinate the typhoid bacillus? He had seen a patient from Cuba with symptoms like those of Dr. Musser's patient, whose blood gave a perfect Widal reaction. The blood of another patient with similar symptoms failed to give the reaction.

DR. HUNTER, of Minneapolis, had seen two cases of dysentery, in one of which the ameba coli was found and in the other of which no amebæ were found. The symptoms were similar to those of Dr. Musser's patient.

DR. WOODHULL, of the United States Army, said that it was the policy of the army surgeons to return dysenteric patients to the United States as soon as possible, because they did not convalesce rapidly in the Philippines.

DR. MURPHY, of Missouri, had seen three cases of

amebic dysentery in patients who had not been away from the United States.

DR. VICTOR C. VAUGHAN, of Ann Arbor, had studied cases of dysentery bacteriologically, and had only found the bacillus coli communis, although these studies were made when technic was not as exact as at present. In the camps in the Southern States during the Spanish War thore were cases of dysentery characterized by the passage of fresh blood. The number of chronic cases, however, was small. During the Santiago campaign, the dysenteric patients did not pass fresh blood. These cases were apparently benefited by strychnine hypodermically.

DR. WILSON, of Pennsylvania, had seen two cases in soldiers of the Tenth Pennsylvania Volunteers. The patients did not pass blood and did not have fever. The disease in one lasted for six months.

DR. FLEXNER said that the epidemics in jails and hospitals may be identical with the disease that he had seen in Manila. It is important that in every epidemic now, no matter how small, bacteriologic examination should be made and the agglutinating properties of the blood be studied. He offered to give cultures of the bacillus of Shiga to any one who was interested in the work. The organism looks very much like the bacillus typhosus. There is no reason why typhoid fever and dysentery might not exist at the same time. There is undoubtedly more than one kind of tropical dysentery. In the type of the disease under discussion liver complications are uncommon, while they are very common in the amebic form. The bacillus coli communis can do damage to the intestines, but it is probably not responsible for epidemics of dysentery.

DR. MUSSER said that the cases of tropical dysentery under his care were afebrile.

DR. J. C. WILSON, of Philadelphia, read a paper entitled

SERUM THERAPY IN CROUPOUS PNEUMONIA.

Croupous pneumonia is due to infection with the pneumococcus through the respiratory tract. Toxins may enter the circulation and produce a septicemia. The sera produced up to the present are anti-infectious, although it is hoped by Dr. Macfarland that in time a serum will be found that will benefit the symptoms. In the German Hospital, in Philadelphia, the antipneumococcic serum was used in 18 cases of croupous pneumonia, but it was not used to the exclusion of other treatment. The injections were given in the majority of instances immediately after admission to the ward. There were two women and 16 men in whom the treatment by injections of serum was used. They varied in age from fifteen to forty-eight years. They were admitted to the ward from the first to the sixth day of the disease. The temperatures ranged from 101.2° to 105°; the pulse-rate varied between 90 and 128. Albumin was present in 15 cases, casts in nine, and blood in one. There was leucocytosis in 13 cases. The pneumococcus was found in 15 of the cases. The serum, which varied between seven and fifty-three days in age, was given hypodermically over periods varying from six hours to eight days. Total doses of from 22 cubic centimetres to 460 cubic centimetres were given. The effects seemed to be better when a recent serum was used. After the injections the temperature became lower, the pulse slower, the pain less, and the patient felt better. Four of the patients died. Defervescence occurred by crisis or by rapid lysis. The duration of the attack did not seem to be lessened or the defervescence hastened. In a series of 20 cases treated at the Pennsylvania Hospital at the same time without serum four died.

DR. A. O. J. KELLY, of Philadelphia, reported the case of a man, an alcoholic, age thirty-five years, who was admitted on the fourth day of an attack of pneumonia of the right lower lobe. On the day after admission the left lower lobe become consolidated, and 20 cubic centimetres of antipneumonic serum were given every three hours for seven doses. The leucocytes were at first diminished, but later increased. The autopsy confirmed the clinical findings. The serum was of no avail in this case.

DR. ROCHESTER, of Buffalo, gave serum from a blister on a patient that was convalescent from pneumonia to a patient ill with the disease. There was improvement for twenty-four hours. He thinks that the evidence points to the future development of a therapeutic agent of value.

DR. NEWTON, of Montclair, N. J., asked for the details of preparation of the serum.

DR. JOSEPH MACFARLAND, of Philadelphia, said that he regretted that up to the present time there is no method of measuring the strength of the serum. The serum is prepared by administering live cultures of the pneumococcus to horses. The organism is difficult to grow, and the measure of the toxin is not accurate. The organism is kept virulent by growing it alternately on artificial culture media and in the rabbit. The nature of the serum is uncertain; it may be antitoxic or it may be antimicrobic, possibly the latter. It is probable that the serum may be used for other micro-organisms than the pneumococcus. He believes that the use of serum from convalescents is unreliable. It is possible that the serum should be injected into the blood-vessels in order to produce the desired result.

DR. W. BLAIR STEWART, of Atlantic City, N. J., read a paper entitled

THE INFLUENCE OF SEA-AIR AND SEA-WATER ON DISEASE.

The purest air is on the sea. The presence of iodine is doubtful, but ozone is surely present. Atlantic City is on an island of pure sand, five miles from the mainland and twenty miles from tidewater. The Gulf Stream makes a difference of from 10° to 20° in the temperature as compared with other places in the country. The great effects of the air are seen on the nervous system and on the digestion. The author spoke of the class of patients that are benefited by residence in such a place. Salt-water baths are in reality medicated baths and should only be used in an intelligent manner, and, for patients, under the direction of a physician. He spoke of the physiologic effects of surf-bathing. The least exhausting form is to lie in the water between the shore and the point of breaking of the waves. A person should leave the bath when the exhilaration is at its height. Surf-baths should be taken three hours after eating, and a meal should not follow until reaction is complete. Warm salt-water baths should be taken in a warm room and should not last longer than ten minutes.

SECOND DAY.

DR. T. J. HAPPEL, of Trenton, Tenn., read a paper entitled

PSEUDO(?) OR MODIFIED(?) SMALL-POX.

The paper was based on the personal observation of 200 cases and on the inspection of 100 additional cases as county health officer. In the first cases seen none of the patients had been vaccinated. The premonitory symptoms of backache, headache and fever were present; but as soon as the eruption appeared the fever disappeared and the patients felt perfectly well except for some slight discomfort caused by the presence of the eruption, which in some of the cases was confluent in character. All patients that were exposed were vaccinated; but only two escaped the infection. Patients that were vaccinated in childhood also contracted the disease. The pustular stage of true small-pox was absent; there was no itching; there were no crusts, no scars, and no mortality. The author considered the disease not to be true small-pox.

DR. JAMES J. WALSH, of New York, called attention to the fact that Senator and his pupils believed in the existence of a disease that is intermediate between varicella and variola. He thought that these cases might correspond to such an intermediate stage.

DR. JAMES, of Missouri, had seen similar cases, but in them he was able to demonstrate the efficiency of vaccination in preventing the contraction of the infection.

DR. CHAPMAN, of Ohio, said that he had seen the disease. According to his experience, the majority of the patients were adults and the majority had been vaccinated during childhood, but not since. He does not think the disease is varicella and is of the opinion that, unless vaccination is systematically carried out, the country will experience a severe epidemic of small-pox.

DR. CORLETT, of Ohio, believes that chicken-pox and small-pox are distinct diseases and that there is no intermediate stage.

DR. WOODWORTH, of Ohio, said that vaccination protected in the cases seen by him. He called attention to the fact that cases of small-pox following vaccination often resemble varicella.

DR. STEWART, of Philadelphia, said that he considered that the cases reported by Dr. Happel were not cases of small-pox, nor were they cases of chicken-pox; but that they should be classed as some form of vesicular exanthem.

DR. HAPPEL said in closing that none of the cases presented the typical appearance of small-pox. He wished to go on record as a thorough believer in the efficiency of vaccination as a preventive measure against small-pox.

DR. EUGENE WASDIN, of the United States Marine-Hospital Service, read a paper on

YELLOW FEVER, ITS NATURE AND CAUSES.

He believes that the bacillus icteroides is the cause of yellow fever. The infection takes place through the respiratory tract and secondary infection may then soon arise. The toxin produced by the growth of the bacillus has a marked potency and a preventive serum is probably possible. The bacillus icteroides was present in 85.7 per cent. of autopsy cases. The bacillus produced the disease in the lower animals. The bacillus X of Sternberg and the bacillus icteroides are distinct micro-organisms; the former being, probably, a member of the colon group. The domestic animals may be a factor in the spread of the disease, since it has been carried spontaneously from inoculated to non-inoculated animals. The bacillus icteroides is an artificially pathogenic organism; it is profoundly influenced by temperatures at or below the frost-mark, and at such temperatures loses its toxic, septic and specific properties. This explains the cessation of the disease on the appearance of frost. The disease is air-borne, it first attacks the respiratory tract and the resulting intoxication produces the first symptoms. The organism may then pass into the circulation and develop its septicity. The fulminating cases are sterile because the bacillus has not passed into the blood. The guinea-pig is resistant to the infection, but other rodents, particularly rats, are susceptible. These animals may be active in the propagation of the disease.

DR. FLEXNER, of Philadelphia, said that while the facts expressed in the paper seem to be well authenticated, before they can be accepted as undoubted they must be confirmed by future observations. The propagation of the disease by the lower animals is at present merely an hypothesis. Animal experiments do not actually reproduce the normal conditions pertaining to an infectious disease, because the animals are overwhelmed by huge doses of the organisms. The effect of the natural method of spread of the disease should be studied on the lower animals.

DR. WASDIN said that in his work the animals had been infected by the insufflation of lycopodium powder containing small quantities of bouillon culture of the organism, so that the conditions were as near normal as possible. Animals in an adjoining room to the one in which the insufflation experiments had been made took the infection and died, the organisms having undoubtedly reached them through the air. In answer to Dr. Gerry, of Boston, he said that one attack of yellow fever does not necessarily protect against a second attack of the disease. Undoubted instances of second attacks of yellow fever are on record.

DR. WILLIAM OSLER, of Baltimore, offered a resolution of regret for the death of Dr. James T. Whittaker, of Cincinnati, which was adopted.

The following papers were read by title: "Prolonged Fevers of Obscure Origin," Dr. Robert B. Preble, of Chicago; "Some Interesting Cases of Infectious Diseases," Dr. DeLancey Rochester, of Buffalo, N. Y.; "Certain Clinical Features of Influenza Recently Epidemic," Dr. H. S. Anders, of Philadelphia; "Influenza with Four Distinct Pneumonic Attacks Accompanied by Otitis Media Purulenta, Cerebral Hyperemia, Colitis, Marasmus, Recovery," Dr. Julius Ullman, of Buffalo, N. Y.; "Observations on Direct Antiseptic Treatment of Infectious Diseases," Dr. C. am Ende, of New York City.

THIRD DAY.

A paper by DR. JESSE W. LAZEAR, of the United States Army, entitled

PATHOLOGY OF MALARIAL FEVERS; STRUCTURE OF THE PARASITES AND CHANGES IN THE TISSUES,

was read by the Secretary, DR. FUTCHER. The author described the method of making cover-slip

preparations of the blood for the study of the malarial organisms. He then proceeded to describe the microscopic appearances of the tertian, quartan, and estivo-autumnal parasites throughout their cycles of development. In the latter type of organism there is a sexual development; the male form is furnished with a flagellum, while the female form is devoid of any such appendage. Observers have seen the male form penetrate the female parasite.

Dr. W. S. Thayer, of Baltimore, Md., read a paper entitled

ETIOLOGY OF MALARIA WITH SPECIAL REFERENCE TO MOSQUITOES.

The author read a summary of the recent work dealing with the mosquito as an agent in the transmission of malaria. This work shows that the mosquito is able to remove the parasite from the human body, that the parasites develop by sexual methods in the stomach wall of this host, that thence, passing into the venomosalivary gland, the parasite, in the form of sporozoids, may be inoculated into uninfected individuals and produce the disease. These results have been confirmed by the author and his associates in Baltimore. The parasite undergoes an asexual cycle of development in the human body and a sexual cycle in the body of the mosquito of the genus anopheles. The author thinks that the investigations will finally show that the mosquito bites are the only means by which the disease can be transmitted. Investigations seem to show that mosquitoes are always present in a malarial district, or else the cases occurring in such a district are imported. Further, the observations seem to show that the mosquito acquires the parasite only from man. The early spring cases are all relapses, which decrease in number in June, and the new cases begin in July, when the anopheles begin to bite. Prophylaxis requires that patients be isolated under mosquito netting and that the mosquito larvæ be killed.

Dr. L. O. Howard, of the United States Department of Agriculture, gave a lantern demonstration of

STRUCTURAL AND OTHER DIFFERENCES BETWEEN THE SEVERAL MOSQUITOES OF NORTH AMERICA.

The slides shown illustrated the life history of the genus culex, the life history of the genus anopheles and the biologic difference between the two genera. The eggs of the culex are deposited in a raft-shaped clump, while those of the anopheles are distinct. The larva of anopheles is dark, while that of culex is light. The respiratory siphon of the anopheles is short, while that of culex is long. The larva of culex has a big head and a small body, while that of anopheles has a small head in proportion to the size of the body. The anopheles larva feeds at the surface of the water, while the larva of culex feeds on the bottom, coming to the top of the water periodically to breathe. The note of culex is high pitched, while that of anopheles is about four tones lower. The genera megarinus and psorofora should be investigated.

(To be continued.)

Cancer in Germany. — Drs. von Leyden and Kirchner are presidents, and George Meyer secretary of a committee for collective investigation of cancer in Germany.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, JUNE 14, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

Subscription Terms: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 Washington Street, Boston, Mass.

THE MASSACHUSETTS MEDICAL SOCIETY.

The one hundred and nineteenth annual meeting of the Massachusetts Medical Society has just been held. This meeting, like its predecessors, has brought together practitioners from every section of the State, who, no doubt, have imbibed certain added knowledge from contact with their fellows and from attendance at the section meetings, and more important than this, have renewed old acquaintanceship, and deepened, to a certain extent, the social relationships which, in the activity of practice, are apt to languish. For after all, while we make a bold front to present at our annual medical gatherings certain of the results of the progress of medicine, it is not to be denied that the predominating attraction is the social element, accompanied by the relaxation and professional companionship which is the just reward for a year of work. This is as it should be.

However valuable papers may be enshrined in a volume of *Proceedings*, it is not to be expected that they should awaken an extreme degree of enthusiasm on an exceedingly hot day, as days are apt to be in June, particularly when those same papers are later to be published in full. This portends no lack of scientific enthusiasm, but simply a weakness of human nature which demands recognition and respect. This general fact has been more and more realized by the Committee of Arrangements of the Massachusetts Medical Society, with the gratifying result that the programme of the meetings grows simpler year by year rather than more complex, in spite of the ever-widening range of possible subjects for discussion. For example, this year there were presented at the various sections but three general topics — pneumonia, the diseases of joints, and a discussion of uterine displacements, with but two added communications. There is not the slightest doubt that this method is a good one, and one designed to give the maximum of instruction with the minimum of intellectual effort on the part of the listeners. A few subjects discussed thoroughly and from various points of view is much to be preferred to the superficial rela-

tion of personal experiences, to which the medical meeting, without strict watchfulness, is apt to degenerate. The success of this latest meeting of the Massachusetts Medical Society and the evident interest taken in the scientific communications is sufficient proof of the correctness of our position. Dr. Wm. H. Welch's Shattuck Lecture on "Diseases Caused by Bacillus Aërogenes Capsulatus" was peculiarly timely because of the recent interest aroused in this subject in Boston, through the researches of Thorndike and others. The Annual Discourse, delivered by Dr. A. T. Cabot, was an able and fitting literary termination to a century of usefulness and progress.

THE DEATH-RATE OF CHICAGO.

RECENT quotations from certain statements in the monthly bulletin of the Health Commissioner of Chicago, in regard to the death-rate of that city, which have very much the usual Western flavor and can hardly be regarded as reliable, have attracted our attention. The following fallacies in the Chicago figures are worthy of notice:

(1) All death-rates depend upon two factors, the number of the population and the number of deaths occurring in such population in a given time or period. An error in either produces an error in the result Now, the number of the population is obtained at the taking of a census and the liability of error increases greatly in proportion to the time which has elapsed since the taking of the census. In this instance eight years had elapsed since the taking of the census, and the growth of all Western cities has been exceedingly irregular in intercensal periods. Very little reliance can be placed in any local census made by the school or police or other local officials.

(2) The average age at death is not an index of sanitary conditions, but depends chiefly upon the age distribution of the population, and the fact that the average age of decedents has doubled in Chicago is not necessarily an indication of increased length of life. To illustrate: The average age at death in a certain infant asylum is two years and six months; that of a neighboring old ladies' home is seventy-five years. We are not, therefore, to infer that the health of the old ladies' home is thirty times as good as that of the infant asylum. This, to be sure, is an exaggerated instance, but the illustration applies equally well to cities and towns. In the two towns of Yarmouth and Winthrop in Massachusetts, each situated in healthy locations on the seacoast, the average age at death in 1885 was respectively sixty-seven years and six months, and seventeen years and four months. This cannot be interpreted as meaning that the sanitary condition of Yarmouth was fourfold better than that of Winthrop. The explanation, as in the other instance, is that Yarmouth, like most of the Cape Cod towns, has a scarcity of young children, while Winthrop has a corresponding dearth of old people. Almost any populous Western city has an unusually large proportion of young and healthy people between the ages of fifteen and thirty years, an age at which the death-rate is very low, not over seven or eight per thousand. Hence it is that in England, when comparing death-rates, the custom has arisen of correcting them, and of referring them to a standard population, such as that of the country at large, or to that of some unusually healthy country like Sweden, which has always had a low death-rate. There is, therefore, a manifest fallacy in comparing the death-rate of Chicago with that of any foreign country, without making the proper correction due to the difference in the constitution of the population.

(3) The health commissioner has adopted an expedient which among sanitary authorities can hardly be considered as a fair method of representation, that of comparing extremes instead of means. The year 1872, as is well known, was throughout the United States the most unhealthy year of the last half century. In every large city where records were kept the death-rate was at its maximum. Almost every known infectious disease seemed to run riot in that year, while, on the other hand, 1898 was a year of unusual health, the death-rate throughout the country being exceptionally low. The only fair method of comparison would have been to compare the means of two five- or ten-year periods, as, for example, 1871 to 1875 with 1891 to 1895, or 1894 to 1898.

AMERICAN MEDICAL ASSOCIATION.

THE last meeting of this growing Association has just been held under more favorable weather conditions than are ordinarily to be expected at this time of year. The gathering was an enthusiastic one, as attested by the fact that upwards of 2,000 members were present. Corresponding with this attendance was a programme which has rarely been equalled in the number and variety of communications presented. Of quantity, therefore, there was certainly no lack, but we are inclined to feel that in these days of excessive literary zeal in medical writing a certain censorship, tending to an improvement of the quality and the arrangement of the subject matter, would not be amiss. Sporadic papers on such occasions are of comparatively small value, and serve rather as a personal advertisement than as a substantial addition to medical progress. It is to be hoped that this representative Association will make a virtue of necessity and bring its programmes in the future within reasonable limits. Science would not suffer, and the responsibilities placed upon the broad shoulders of the medical editor would be visibly lightened. We are, therefore, quite in accord with our contemporary, the *Philadelphia Medical Journal*, when it comments editorially on the recent meeting: "There was the same plethora of papers offered, again proving how necessary it is that the officers of sections should weed and choose and limit according to their judgment and conscience, and regardless of personal influences."

MEDICAL NOTES.

INTERNATIONAL MEDICAL CONGRESS. — At the request of Henry B. Jacobs, M.D., Secretary, American National Committee of the International Medical Congress, the following official statement is made: According to instructions from Dr. A. Chauffard, Secretary-General of the Thirteenth International Medical Congress, no subscriptions to the Congress will be received after the 15th of July, and the name of no subscriber will appear in the official programme whose subscription is not received before the 15th of June. The publications of the Congress will consist of seventeen volumes, one of which will be sent gratuitously to each subscriber; that is, the volume containing the papers of the section under which he has inscribed himself. The other sixteen volumes may be purchased at a price of four francs per volume, or forty-five francs for the series.

PHILIPPINE ASSOCIATION OF ACTING ASSISTANT SURGEONS, UNITED STATES ARMY. — The first annual meeting and dinner of the Philippine Association of Acting Assistant Surgeons was held in Manila, May 3d. The Association was formed April 28, 1900, on board the United States Army transport *Grant*, on which seventeen of the members of the Society came over to the Philippines to care for sick and wounded soldiers. The following were elected officers of the Association: President, H. W. Beal; Vice-President, H. Morell; Corresponding Secretary, R. M. Inglish; Recorder, H. M. Stromberger. It is the intention of the Association to enroll as members all the acting assistant surgeons in the Philippine Islands and hold a meeting and banquet on "Dewey Day" (May 1st) every year in the future.

PRIVILEGES FOR MEMBERS OF THE INTERNATIONAL CONGRESS. — The following special privileges are to be accorded to the members of the Congress: The right to participate in the proceedings of all the sections; invitation to all festivities; entrance free of charge to the Exposition during the session of the Congress, August 2d to 9th; a badge engraved for the Congress by M. Vernon; reduction in railway and other fares; facilities for securing lodgings.

CHOLERA IN BOMBAY. — A serious epidemic of cholera is reported from the northern districts of Bombay. The sufferers from famine fall an easy prey to this disease. The Government has made a special appropriation of £1,000 for immediate cremation of the dead.

DEATHS ABROAD. — The following deaths of distinguished physicians are announced: Dr. A. Milne Edwards, Paris; Dr. Apostoli, Paris; George Viner Ellis, F.R.C.S., London.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, June 13, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 61, scarlatina 34, measles 89, typhoid fever 16.

MORTALITY REPORT OF BOSTON. — The number of deaths reported to the Board of Health for the week ending June 9th was 215, as against 208 the corresponding week last year, showing an increase of 7 deaths, and making the death-rate for the week 20.2. The deaths from consumption were 25; pneumonia, 27; whooping cough, 1; heart disease, 22; bronchitis, 6; marasmus, 7. There were 8 deaths from violent causes. The number of children who died under one year was 35; under five years, 67; persons more than sixty years, 40; deaths in public institutions, 63.

APPOINTMENTS AT THE HARVARD MEDICAL SCHOOL. — Franz Pfaff, M.D., has been appointed assistant professor of pharmacology and therapeutics for five years. Dr. F. H. Davenport has been reappointed assistant professor of gynecology.

PRESIDENT OF THE MASSACHUSETTS MEDICAL SOCIETY. — Dr. F. W. Draper, of Boston, has been elected President of the Massachusetts Medical Society.

DIPHTHERIA IN WATERTOWN, MASS. — Several new cases have recently been reported to the Watertown Board of Health.

NEW YORK.

STATISTICS OF WOUNDS IN WAR. — In a paper read by Capt. W. C. Borden, U. S. A., on the last day of the recent meeting of the Association of Military Surgeons, on "The Mortality of War Wounds, with Tentative Conclusions Relative to Modern Weapons and Surgical Methods," the following statistics were given: In the American Civil War out of every 100 persons struck by a bullet 15 per cent. died on the field of battle; in the Russo-Turkish War, 21 per cent.; in the Spanish-American War, 17 per cent. Of the 100, 40 received wounds of the head, 29 wounds of the abdomen, 26 wounds of the chest, and three wounds of the extremities. Of the men wounded and carried from the field of battle during the Civil War, 10.9 per cent. died; in the Spanish-American War, seven per cent.; in the Boer War, four and a half per cent.; in the Philippine War, six per cent. Having given the statistics of wounds in different parts of the body in the several wars mentioned, Dr. Borden stated that the data he had collected showed that so far as the modern armament in death-dealing weapons is concerned, the modern weapon seems to be as destructive as those of earlier years, as regards wounds in the head, chest and abdomen, on the field of battle. The fact that there was a smaller percentage of deaths from wounds in other portions of the body showed the improvement in surgery and the care of the wounded. In the Boer War two-thirds of the British soldiers who were wounded and attended in the hospitals were able to return to the field. The reason for this was not so much the lessening of the destructive power of the rifle as the great progress made in surgery and hospital care.

DESTRUCTION OF GARBAGE. — Capt. F. M. Gibson, Deputy Commissioner of Street Cleaning, has advertised for proposals for the erection of a plant, or plants, for the destruction of the city garbage, to replace the works on Barren Island, which, under an act passed by the last Legislature, must be removed within a year. Among those desirous to undertake the work, it is said, is the Horsfal Company, an English corporation, which cremates the garbage of Liverpool, Leeds and a number of other British cities. In the meanwhile, the department has been notified by the present contractors that they purpose testing the constitutionality of the new law.

BIOLOGICAL LABORATORY FOR VASSAR COLLEGE. — Announcement has been made of the completion of the fund of $50,000 for the construction and equipment of a biological laboratory at Vassar College. Over a year ago a friend of the College residing in New England, whose name was not made public, offered to subscribe $25,000 for this purpose, on condition that the additional $25,000 required could be raised. The hope was expressed that all the money might come from New England, and it is said that the entire sum has been secured through the efforts of the Boston branch of the Vassar Alumnæ.

COMMENCEMENT, MEDICAL DEPARTMENT OF CORNELL UNIVERSITY. — The annual commencement of the Medical Department of Cornell University was held at Carnegie Music Hall on June 6th. There were fifty-three graduates, twenty-one of whom were women. On the roll of honor, which comprised ten names, there was one woman. President Schurman announced that of the entire number of graduates thirty-four have already received appointments in hospitals in New York and adjoining cities. The address to the graduating class was made by the Rev. Dr. Vanderwater.

APPOINTMENTS AT THE COLLEGE OF PHYSICIANS AND SURGEONS. — At a meeting of the Trustees of Columbia University, held June 4th, the following appointments in the Medical Department (the College of Physicians and Surgeons) were announced: Dr. Frank Hartley, professor of clinical surgery and instructor in operative surgery; Dr. Francis H. Markoe, professor of clinical surgery at the New York Hospital; Dr. Bern B. Gallaudet, demonstrator of anatomy; Drs. Robert A. Budington and Nathan W. Greene, assistant demonstrators in anatomy.

REGULATIONS REGARDING TUBERCULOSIS IN NEW JERSEY. — The Board of Health of Trenton, N. J., with the backing of the State Board, has recently adopted an amendment to the Health Code, placing consumption among the contagious and infectious diseases. It provides fines and imprisonment for physicians who fail to report cases of consumption within thirty days after they are diagnosticated. Hospitals are not exempted from the general provisions.

COMMENCEMENT OF THE UNIVERSITY OF THE CITY OF NEW YORK. — At the sixty-eighth annual commencement of the University of the City of New York, which was held at the Metropolitan Opera House on June 7th, there were thirty-eight graduates in the Medical Department (University and Bellevue Hospital and Medical College), and eight graduates in the Department of Veterinary Surgery.

COMMITTEE OF ONE HUNDRED ON INDIA FAMINE RELIEF. — A committee of one hundred representative citizens of New York, under the chairmanship of Wm. E. Dodge, has recently been formed to the end of sending relief for India famine sufferers. The committee will constantly study the conditions of the famine itself, and make every effort to choose the best method of relief.

ARMY NOTE.

INVESTIGATION OF DISEASE BY ARMY MEDICAL OFFICERS. — A board of medical officers has been appointed to meet at Camp Columbia, Quemados, Cuba, for the purpose of pursuing scientific investigations with reference to the infectious diseases prevalent on the island of Cuba. The board will act under instructions from the Surgeon-General of the Army. The detail for the board consists of Major Walter Reid, Surgeon U. S. A., and Acting Assistant Surgeons James Carroll, Aristides Agramonte and Jesse W. Lazear. It is understood that the board will chiefly devote attention to the investigation of yellow fever. Dr. Agramonte has been studying this disease in Havana for the past eighteen months, while Major Reid and Dr. Carroll, at the Army Medical Museum in Washington, have been engaged in an exhaustive study of Sanarelli's bacillus and serum, the results of which have already been made public. The work of the board will be done in the army laboratory at Quemados. As mentioned in a previous issue, the systematic investigation of disease by army medical officers in Cuba, Puerto Rico and the Philippines has already been of great value to medical science. From the organized investigations now going on, much may be expected.

Miscellany.

HORSEFLESH AS A FOOD.

IN view of the fact that horseflesh is being used more and more as a food in Germany, and through force of necessity, as in the South African War, must at times be eaten in lieu of other meat, it becomes a matter of importance to determine its effects upon the body. This Professor Pflüger has done, his results being published in the *Archiv für Physiologie*, and abstracted in a recent number of the *Lancet*. The experiments went to show that the known deleterious effect of horseflesh, characterized chiefly by excessive diarrhea, is due to a toxin, probably consisting of neurin or some modification of that poisonous agent.

The paper concludes with some suggestions for cooks in beleaguered garrisons who are reduced to horseflesh as food, which, coming from the pen of one of the most distinguished living physiologists, deserve consideration. In one mode of dressing the horseflesh is converted into a pulp, and for every two pounds about three-quarters of an ounce of ox fat or mutton fat taken from the region of the kidneys is served up with a sauce of meal as a hash. Another is to cut it into collops, boil it in water, throw away the broth, and serve it with a fat sauce. Beer, wine, tea or coffee may be taken with it. A third is to convert it into a pulp, add a tenth of its weight of rice and a fortieth of its weight of fat, and cook by steaming; or, lastly, it may be beaten up with plenty of fat and eaten with an oily sauce.

Obituary.

PAUL GIBIER, M.D.

DR. PAUL GIBIER, of New York, died June 9th, from injuries inflicted by an accident. He was born in France in 1851, and was at one time a pupil of Pasteur. In 1888 he was commissioned by the French Government to make an investigation of yellow fever, in Havana and Florida, and on his way back to Paris, while in New York, conceived the idea of establishing an institute in the latter city for the treatment of hydrophobia. With this work he was closely identified until his death.

Correspondence.

PRELIMINARY REPORT ON INVESTIGATIONS IN THE BACTERIOLOGY OF SCARLET FEVER IN THE SCARLET-FEVER WARDS OF THE CHILDREN'S HOSPITAL, BERLIN.

BERLIN, May 18, 1900.

MR. EDITOR: — The work described below is according to plans I formed some eighteen months ago, at which time I lacked proper opportunities for carrying them out. Under strict aseptic precautions I have lately collected, through a canula into sterile test tubes, hydrocele fluid from a healthy child of nine months who has never had any of the contagious diseases or even been vaccinated. Specimens of this material remained sterile after a number of days at body temperature. Into this media I made inoculations from the blood of several patients in the early eruptive stage of scarlet fever, observing rigid asepsis. Cultures were similarly prepared on coagulated ascitic fluid, bouillon, agar-agar and milk. All were kept at body temperature for about thirty-six hours. Examination then showed no development in any but the hydrocele fluid, in which appeared a feeble growth of a capsulated diplococcus in pure culture. It grew thus from the blood of each case, and while probably the same organism often described in connection with scarlet fever as the diplococcus pneumoniæ cruposæ, it may be but a variety of that germ. On re-inoculation of this into agar-agar, gelatine, blood serum and hydrocele fluid, a luxuriant growth now appeared in each within twenty-four hours. In the latter media the bacteria developed very rarely in anything but pairs. The ends of these oval cocci always pointed away from each other, and unstained preparations seemed to show dark granules in the protoplasm. The growths on the blood serum and agar appeared as frosty, granular, grayish-white streaks limited to the path of the inoculating needle. The stab culture in gelatine was similar and no liquefaction attended it. Cover slips prepared from these took the methylene blue stain irregularly. No change in reaction accompanied the growth on the media.

On investigating as to why I did not succeed in inoculating the artificial media from the patient's blood, and why the original cultures in hydrocele fluid were hindered in developing, my experiments showed a reactive power in the blood of scarlet-fever patients against this diplococcus. I found that in hanging-drop preparations from the second generation in hydrocele fluid the organisms when placed simply in normal salt solution remained scattered throughout the droplet in pairs and kept their slight motility for hours. A similar drop in salt solution to which some blood from a patient convalescent from this fever was added gave quite a different appearance after some minutes. The bacteria were then found only at the edge of the drop, had become quiet and often appeared in groups. However, when hanging-drop preparations were treated simply with blood from a child which has never had scarlet fever the cocci gave the same appearance as when only in normal salt solution.

From a culture of the streptococcus which I prepared on blood serum from the throat of one of the patients (as I did not meet with it in the several cultures from the blood) I inoculated a colony into the hydrocele fluid and also into the latter media after coagulation. No growth developed in the former and only three or four colonies in the latter, but numerous colonies of streptococci were found after I caused the diplococcus to grow on the media. From the heart blood of one of the cases which proved fatal I did not succeed in growing the diplococcus.

My experiments as to the power existing in the blood of convalescents from scarlet fever to hinder the growth of the diplococcus when already developing on media are not yet complete. The inability to gather sufficient supply of suitable hydrocele fluid while at work in the contagious wards has as yet prevented my carrying the investigation out on a more extensive scale or to definite conclusions. Up to this time I have not experimented with hydrocele fluid in the other contagious diseases, nor can I say how the germs mentioned will act on the hydrocele fluid from those children believed to be immune to scarlet fever.

I injected half a cubic centimetre of the vigorous growth in hydrocele fluid into the peritoneal cavity of a kitten and no symptoms whatever followed.

The results of my examinations thus far would seem to justify the following inferences:

(1) The early presence of this diplococcus in the blood of many if not all scarlet-fever patients, and the absence in the blood at this time of the streptococcus.

(2) That hydrocele fluid from a child who has not had a contagious disease may possess qualities better suited for investigating that disease than the artificial media or serum changed by heat.

(3) That the blood of those who have been infected with this diplococcus a short time shows a reactive power against it.

(4) That the doings of this "happy pair" seem to open the way for the serpent of streptococcus to bring evil into the Eden of childhood.

Very truly yours,
W. F. DOOLITTLE, M.D.,
of Cleveland, Ohio.

FOREIGN BODY IN THE RECTUM.

WINCHENDON, MASS., June 4, 1900.

MR. EDITOR: — A man, age sixty, recently consulted me at my office for what he termed "a little trouble with his rectum." On enquiring the nature of the trouble, he said he thought there was a "small vial" in it. He said he had inserted it about thirty-six hours previously; had consulted his doctor at home, who did not examine him but gave a cathartic. On examination I found what seemed to be a bottle of considerable size, well inside the sphincter, with the neck down. It was firmly impacted and I was

soon convinced that its removal would be a matter of difficulty. He was having a good deal of pain and the abdomen was considerably distended and tympanitic. With the assistance of Dr. Thorning, he was thoroughly anesthetized and by grasping the neck of the bottle with two pairs of heavy tooth forceps, having the jaws well guarded with compresses, after a difficult and disagreeable labor we succeeded in delivering the vial. It proved to be a round bottle, fortunately of very heavy glass, and with quite a rim at the neck which afforded an excellent hold for the forceps. It was of the following dimensions: Length five and one half inches, circumference of neck five and one fourth inches, of shoulder eight and one fourth inches, of base six and three-fourths inches.

By diligent questioning, I obtained the following scanty history. Of vigorous physique, he had always enjoyed excellent health, and had for many years been employed in a shop. Was married, and till within a year or two his relations with his wife had been pleasant, but for a year or two they had occupied separate beds, and his wife had accused him of improper relations with other women. Admitted that he was quite amorous, and that he had on one or two previous occasions introduced something into his rectum.

Very truly yours,
J. G. HENRY, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JUNE 2, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Diphtheria and croup.	Measles.
New York	3,654,594	—	—	—	—	—	—	—
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	—	—	—	—	—	—	—
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	216	77	22.08	14.26	.92	5.52	—
Baltimore	506,389	152	44	17.82	12.54	2.64	1.32	.66
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	—	—	—	—	—	—	—
Washington	277,000	111	33	33.33	9.00	5.40	1.80	4.50
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	59	17	27.64	27.67	4.38	1.69	1.69
Nashville	87,754	—	—	—	—	—	—	—
Charleston	65,165	—	—	—	—	—	—	—
Worcester	111,732	36	18	12.62	30.47	2.77	—	2.77
Fall River	103,142	25	14	28.00	36.00	8.00	12.00	—
Cambridge	92,520	19	8	42.08	10.52	5.26	15.78	—
Lowell	90,114	28	16	17.85	14.28	3.57	3.57	—
New Bedford	70,511	20	4	5.00	15.00	—	5.00	—
Lynn	68,218	19	4	36.82	5.26	—	10.52	10.52
Somerville	64,294	12	3	50.00	8.33	8.33	8.33	—
Lawrence	59,072	19	10	36.82	5.26	—	10.52	—
Springfield	58,266	25	5	8.00	16.00	—	—	—
Holyoke	44,510	—	—	—	—	—	—	—
Brockton	38,759	6	3	16.66	50.00	—	16.66	—
Salem	37,723	16	7	25.00	—	6.25	6.25	—
Malden	36,421	5	1	20.00	20.00	20.00	—	—
Chelsea	34,235	11	4	18.18	—	—	—	—
Haverhill	32,651	14	2	35.70	14.28	—	—	—
Gloucester	31,428	6	—	16.66	—	16.66	—	—
Fitchburg	30,523	13	—	30.76	7.69	—	7.69	—
Newton	30,461	8	3	—	12.50	—	—	—
Taunton	28,527	9	3	22.22	11.11	11.11	—	—
Everett	28,102	6	—	16.66	16.66	—	—	—
Quincy	24,578	6	3	50.00	—	—	—	—
Pittsfield	23,421	—	—	—	—	—	—	—
Waltham	22,791	19	3	15.78	15.78	—	—	—
North Adams	21,583	13	5	15.38	23.07	—	—	—
Chicopee	18,316	—	—	—	—	—	—	—
Medford	17,190	2	2	—	—	—	—	—
Newburyport	15,036	6	1	33.33	—	—	—	—
Melrose	14,721	4	1	—	—	—	—	—

Deaths reported 907; under five years of age 308; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 220, acute lung diseases 128, consumption 105, diphtheria and croup 27, diarrheal diseases 24, measles 12, scarlet fever 10, cerebrospinal meningitis 10, whooping-cough 9, typhoid fever 7, erysipelas 5.

From scarlet fever Boston 8, Washington, Worcester and Lawrence 1 each. From cerebrospinal meningitis Quincy and Marlboro 2 each, Boston, Baltimore, Worcester, Cambridge, Lynn and Gloucester 1 each. From whooping-cough Boston 3, Baltimore and Salem 2 each, Washington and Providence 1 each. From typhoid fever Washington 2, Boston, Baltimore, Providence, Lawrence and Newburyport 1 each. From erysipelas Boston, Baltimore, Washington, Somerville and Lawrence 1 each.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,206, for the week ending May 26th, the death-rate was 18.4. Deaths reported 4,098; acute diseases of the respiratory organs (London) 296, measles 127, whooping-cough 126, diphtheria 81, diarrhea 39, fever 34, scarlet fever 34, small-pox (Liverpool) 2.

The death-rates ranged from 12.3 in Croydon to 27.4 in Liverpool: Birmingham 20.1, Bradford 16.1, Cardiff 12.6, Gateshead 18.6, Hull 21.2, Leeds 22.1, London 16.4, Manchester 25.5, Nottingham 17.0, Portsmouth 16 0, Salford 23.8, Sheffield 19.4, Swansea 15.8, West Ham 13.4.

METEOROLOGICAL RECORD

For the week ending June 2d, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.			Relative humidity.		Direction of wind.		Velocity of wind.		We'th'r. *		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S...27	29.98	57	66	48	65	47	56	N.W.	S.	4	8	O.	F.	
M...28	30.26	49	53	45	74	36	56	N.E.	N.E.	16	3	O.	C.	
T...29	30.33	58	74	42	37	42	40	W.	S.	6	10	C.	C.	
W...30	30.14	68	82	55	47	51	49	W.	S.W.	8	12	C.	O.	
T....1	29.92	74	87	61	68	57	62	W.	W.	12	8	C.	F.	
F....2	30.01	77	86	68	52	62	57	N.W.	S.E.	8	7	O.	O.	
S....3	29.83	76	86	65	67	68	68	S.W.	S.W.	14	10	O.	O.	

☞

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☞ Mean for week.

SOCIETY NOTICES.

AMERICAN ELECTRO-THERAPEUTIC ASSOCIATION. — The tenth annual meeting of this Association will be held September 25, 26 and 27, 1900, at the Academy of Medicine, New York City.

MAINE MEDICAL ASSOCIATION. — The forty-eighth annual meeting of the Association will be held in Portland, Me., June 13, 14 and 15, 1900.

BOOKS AND PAMPHLETS RECEIVED.

Transactions of the Chicago Pathological Society, from May, 1897, to June, 1899. Vol. III. 1900.

Normal Histology. By Edward K. Dunham, Ph.B., M.D., Professor of General Pathology, Bacteriology, etc. Second edition, illustrated. Philadelphia: Lea Brothers & Co. 1900.

Contributions to the Science of Medicine. Dedicated by his pupils to William Henry Welch on the Twenty-fifth Anniversary of his Doctorate. Baltimore: The Johns Hopkins Press. 1900.

Transactions of the New York State State Medical Association for the Year 1899. Vol. XVI. Edited for the Association by M. C. O'Brien, M.D., of New York County. New York City. 1900.

Verhandlungen des Vereins für innere Medicin zu Berlin. Herausgegeben von dem Vorstande des Vereins, Jahrgang XIX, 1899-1900. Sonderabdruck aus der "Deutschen medicinischen Wochenschrift," Jahrgang, 1899-1900. Berlin. 1900.

A Manual of Obstetrics. By A. F. A. King, A.M., M.D., Professor of Obstetrics and Diseases of Women and Children in Medical Department of Columbia University, etc. Eighth edition, revised and enlarged, illustrated. Philadelphia and New York: Lea Brothers & Co. 1900.

The Management of Large Congenital Exomphalos; Infantile. The Therapy of Feminine Hernia in the Adult. On Radical or Tentative Treatment of Piles. Hemorrhage and Circulatory Disturbances in Complicated Fracture. By Thomas H. Manley, M.D., New York. Reprints. 1899-1900.

A Text-Book of Practical Therapeutics, with Especial Reference to the Application of Remedial Measures to Disease and their Employment upon a Rational Basis. By Hobart Amory Hare, M.D., B.Sc. Illustrated. Eighth edition. Philadelphia and New York: Lea Brothers & Co. 1900.

Address.

REALISM IN MEDICINE.[1]

BY A. T. CABOT, A.M., M.D., BOSTON,
Surgeon to the Massachusetts General Hospital.

(Concluded from No. 24, p. 618.)

I HAVE presented to you this brief and incomplete sketch of the great movement of medicine under the guidance of realism, to show how it has steadily proceeded along a path without a break, or rather the progress has been more like that of an army penetrating an enemy's country, where different columns, mutually supporting each other, advance along parallel lines, meeting success now here, now there.

Cellular pathology put us in a position to appreciate and understand the action of germs, and the work in bacteriology opened ways in which the student of the cell could make still further conquests.

I have not tried to do more than point out the grand strategy of the forward movement and the important places that have been taken. Many of the lesser achievements in this advance have, however, been essential to the success of the greater.

Physiology, physiological chemistry, pathology, bacteriology, embryology, anatomy, clinical medicine and surgery, have all, within their own fields of action kept abreast of the general movement. Men trained in science, skilled investigators, have occupied the firing line, constantly pushing forward, and as fast as they have gained new territory the practitioners of medicine have moved in like settlers and made it their own.

After this hasty review of the general course of medicine in this century, it should be of especial interest to us to study the part which America has played in promoting and in keeping step with the advances that have been made.

At the beginning of the century the main idea that an American student had in entering upon the study of medicine was to learn what he could of the care and treatment of the sick, with so much understanding of anatomy, physiology and pathology as could be made of service in his practical work. The teaching in the scientific branches of medicine was, as I have said, very meagre in this country, so that a young man, wishing to be thoroughly abreast of the times, was forced to seek instruction in the laboratories of Europe. The result of this was that a well-trained American physician had usually passed two years abroad acquainting himself with the methods of the best teachers of the world.

The lack of opportunity at home, forcing men to travel, had its partial recompense. For the young American, travelling from teacher to teacher, going for each part of his education to the place where that was best taught, learned to look at things in a broader way than would have been the case had he found all that he required in one school.

This increased breadth of view was at once reflected in the medical practice of the men so trained, and long before American physicians began to take their proper place as scientific investigators, they developed in their ranks some of the best practitioners in the world.

Many men came back from their foreign travel filled with a desire for research; but the absence of laboratories and the need for self support stunted their aspirations in such directions. It was not until the last quarter of the century that the use of laboratories became so manifest that they began to spring up and to receive adequate support in this country. I cannot, even in so condensed a review of this movement, forbear to speak of the pioneer work done at the Johns Hopkins Hospital under the inspiring lead of our guest, Prof. William H. Welch. The wise provisions of that foundation gave the Johns Hopkins Medical Faculty the almost unique opportunity of putting their school on the right line from the start. And, thanks to the wisdom and energy of Professor Welch and his co-workers, the scientific investigation of disease at once took its proper place in that institution. Since that time the constant help that laboratory investigation gives to the clinical study of disease has appealed so strongly to the practical American mind that pathological laboratories have sprung up in every direction and are still constantly on the increase. These have been of the greatest value in raising the scientific quality of the work in many of our communities. Such laboratories have given men inclined to research opportunity for pursuing their studies, and have also enabled many clinical workers to acquire a knowledge and facility in scientific methods. This training has been of great service in their practice. They have gained a clearer understanding of morbid processes and have come to have a personal acquaintance with the germs against which they are constantly waging war. When a man thus trained speaks of a bacillus, he has in his mind a distinct picture of its appearance and its characteristics. He knows where to look for it and what effects to expect. If it is a pneumococcus he watches the serous membranes and early detects its migration to them. His horizon has become wider and his vision more acute.

With the appearance of laboratories the need of endowments for pathological and other scientific work has been brought home to our people. Practical business men see that the researches in the higher branches of medicine bear tangible and most valuable results; that by them the health of the community is improved and protected. They are thus encouraged to invest in a movement which has such evident good effects in the present and that holds forth still brighter promises for the future. Considerable sums of money have been drawn into these enterprises and have already done much good. They have, however, been but as a drop in the bucket which we wish to see filled. This work, by its interest attracts the best minds and the world should discharge its proper obligation to them and should see that they are adequately cared for.

The administration of laboratories and the prosecution of complicated investigations is expensive.

At present I see no direction in which charity to the human race can better expend itself, with full assurance of lasting good, than in assisting the prosecution of such studies, whose benefits are shared by all peoples and go down to remotest posterity.

The perfecting of a system under which the scientific investigation of disease may flourish should be the constant aim of all American physicians. The profession of this Commonwealth have already taken steps in this direction, of which mention may be here appropriate. A quarter of a century ago we had at the Harvard Medical School, a chemical laboratory, a

[1] The Annual Discourse read before the Massachusetts Medical Society, June 13, 1900.

physiological laboratory, a dissecting-room and a small pathological laboratory. Students had fairly good opportunities for the study of chemistry and anatomy, but they had no regular laboratory instruction in either physiology or pathology. Both of these important branches were taught by lectures to large classes in which each individual had but little personal contact with the professor, or with the phenomena described. The pathological instruction up to that time and till a considerably later period, was given by men who depended on clinical practice for their support and gave what time they could spare from this to their own scientific studies and to the instruction of the students.

It would take too long to describe in any detail the gradual changes by which this condition of things grew and expanded into that which exists to-day; but a statement of the present provisions for research and teaching in the Harvard School will give an idea of the rapidity with which this movement has advanced.

The physiological laboratory, with a professor, an associate professor and a greatly increased corps of teachers, is now thrown open to the students, who receive personal instruction in small classes. There is a laboratory for embryology and histology, where the development and the finer anatomy of the tissues is taught to small classes by the professor, the assistant professor and other assistants.

There is a good-sized pathological laboratory under the direction of a professor who gives his whole time to study and teaching, and he has in addition to this the control of the clinical laboratory at the City Hospital, which is under the supervision of the assistant professor.

The clinical laboratory at the Massachusetts Hospital is also available for teaching purposes, and being under the direction of one of the instructors in pathology, makes very substantial contribution to the opportunities that students have in this branch.

Surgical pathology has a special demonstrator and the curator of the anatomical museum, having control of the surgical material obtained at the Massachuchusetts Hospital, is able to give special instruction in it. In the new buildings now nearing completion, he will have a large room devoted to his department and will have ample accommodation for small classes in this specialty. The surgical department, too, have taken steps towards the establishment of a special laboratory in the Medical School for surgical pathology.

Even this list does not complete the recital of what the Harvard Medical School is doing for pathology, for at the Bussey Building in West Roxbury the professor of comparative pathology has his laboratory and is constantly at work on the pathological questions suggested by the diseases of animals and has done much in tracing out their connections with human diseases. The limitations of the laboratory space at his disposal prevents his accommodating students, but his own original researches are making constant valuable contributions to our knowledge of microbic diseases.

In addition to these laboratories and teachers devoted to the study of pathology, the medical school has also a large and well equipped laboratory devoted to bacteriology, and a professor with a corps of assistants devoted to the study of the life history of microorganisms. Besides the instruction and research work done there, great assistance is rendered to private practitioners by the systematic examination of material submitted. Thus this department acts in a measure as a clinical laboratory for the profession outside of the hospitals.

A considerable enlargement of the chemical laboratory and its staff, the establishment of a laboratory for physiological chemistry under able direction, a laboratory of pharmacology and a laboratory of hygiene, with an assistant professor, who, besides his research and teaching, gives aid to practitioners by examinations made for them, complete this rehearsal of the present provisions and opportunities for scientific training.

Certainly the contrast between the conditions of twenty-five years ago and those of to-day indicates that our medical teachers are fully awake to and mindful of the demands of modern science. Indeed, despite all the recent improvements that I have imperfectly recounted, the College is, at this moment, considering a plan for the very great enlargement of the Medical School accommodations. They are driven to this by the need for still more laboratory space to meet the requirements of modern medical education.

I have selected the Harvard Medical School to serve as an illustration of the recent advances in American methods of study, because it is the institution with which we are most familiar. Similar changes have been going on in greater or less degree in all our centres of medical study, and as a result of this awakening of interest in scientific investigation and teaching, we have already reached the point where it is no longer necessary for American practitioners to go abroad to complete their training in the higher branches of medicine. Ample opportunities now exist in this country for the attainment of an education wholly up to the modern requirements of practice.

It is still wise for a man who can spare the time to travel and learn what he can of other points of view and methods of work. I am inclined to think that the time is near, if not already here, when our foreign *confrères* might learn something by coming to this country.

An acquaintance with the literature of a subject does not widen a man's field of view in the way that an acquaintance with the makers of that literature does.

To return from this digression and to continue our consideration of home matters, we find that this movement towards scientific and accurate methods is not confined to the teachers of medicine. If the time served, it would be a congenial task to say a few words of deserved praise of our boards of health.

The executives of State and city have been fortunate in selecting competent, sagacious men to guide the public in matters of sanitation. We are not surprised, therefore, to find that they have been fully alive to the forward movement in medicine, and have established laboratories for the study of sanitary questions. Here are made the many tests necessary in the selection of cases for isolation. Antitoxin is here carefully prepared for distribution, and all possible aid is given to practitioners in the application of laboratory methods to the study of their cases.

We are thus entering the twentieth century with an enthusiasm and a promise for the future which are well justified by what has already been accomplished.

We have many unfinished tasks on our hands. Important principles have been established in the nine-

teenth century the detail of which remains to be worked out.

There are many infectious diseases and others believed to be parasitic in origin, of which the microbic causes remain to be discovered.

Our knowledge of the action of microbes in the body and of their effects upon the tissues is in its infancy.

What we know of the action of the tissues in protecting themselves from the micro-organisms and their products is as nothing to what remains to be known.

Efficient antitoxic sera are as yet few, but the list is slowly growing.

These are all questions which bear directly on the successful treatment of disease. We wish, however, to aim higher than this and to learn how to prevent disease.

Our experience with small-pox and diphtheria shows that for some diseases, at least, the body may be made resistant by producing alterations in its fluids or tissues. Lister has shown us, too, how other diseases may be prevented by intercepting the microbes and preventing their entrance into the body. This is comparatively easy in surgery, where we have full control of the conditions; can we not protect the body from other infections? Our methods of disinfection of dwellings and public places are constantly improving, but they are still lamentably inadequate. Our boards of health have accomplished something by the isolation of cases of infectious disease and by the extensive use of disinfectants to cleanse the habitations of the sick. The street cars are adorned with signs warning against expectoration, in the hope of thus limiting the spread of tuberculosis, the germs of which are contained so abundantly in the sputa of those afflicted.

May we not hope that further knowledge of the life history of micro-organisms and a more widely spread habit of seeking them out may make their destruction more generally attempted and more thorough?

If every public hall and school-room could be safely and quickly disinfected during the night hours while it is empty, is there any doubt that the public health would be greatly benefited thereby? Sanitary engineering may make this possible, in which case every enlightened community will make it obligatory. Unfortunately, there is a force constantly contending against the efforts of our sanitarians and this is the very steady increase in the numbers and consequent crowding of our populations. For germs flourish in a crowd.

It is to be hoped that the efficiency of our methods of sanitation will be so greatly added to in the near future as to enable us to meet and overcome these increasing difficulties.

There is another nut that the nineteenth century leaves for the twentieth century to crack, if it can. It is the question of the cause and nature of malignant growths. With all the knowledge of them that we have gained through cellular pathology and embryology, we are still left much in the dark with regard to their causation. Bearing considerable resemblance, as some of them do, to processes that are known to have a microbic cause, it is natural that attempts should have been made to convict them of a parasitic origin. Without going into the arguments or a minute consideration of the evidence advanced, I think that I shall be in accord with the best present opinion if I bring in a verdict of "not proven."

Diseases of this sort, especially the carcinomata, are apparently on the increase. So prevalent are they and so much to be dreaded that were it possible to choose in advance the next great medical achievement, the world's vote would probably be for the discovery of a cure for cancer.

It will then, perhaps, be interesting for you to know that provisions have been recently made in this community looking to systematic research into the cancer question, and I am sure you will be glad to hear what steps are being already taken in this direction. Last year a sum of money was put at the disposal of Harvard College for the investigation of this question. The donor, Mrs. Caroline Brewer Croft, left by will, $100,000 for this purpose, and after deducting the exceedingly liberal legacy tax which England exacts, a still considerable sum is left for the furtherance of the wishes of the testatrix. The income of this fund, with some substantial additional gifts obtained by the professor of surgery for the same object, are now available for these researches. The investigations under the direction of a committee appointed by the corporation of the college have been put in charge of the department of surgery, and the instructor in surgical pathology has been selected to especially devote himself to a study of the pathological side of the subject. The co-operation of the laboratories of the Boston City Hospital and of the Massachusetts General Hospital has been obtained, and workers in these laboratories have been selected to devote their time to this object. All of these men are in close touch with each other and will have the control of a large amount of material.

At first it is proposed to examine the present theories of cancer production. The question of the relation of germs or parasites to these growths will receive minute and exhaustive attention. Incidental to this examination, the inoculability and infectiousness of malignant growths will be studied.

Besides this study of the pathological side of the subject, attention will be given to the general question of whether the impression that malignant growths are on the increase is well founded. Statistics are already being collected with a view to getting information upon this point as well as ascertaining the conditions of life which favor the development of these neoplasms, and it is hoped that by a long persistent effort in this direction, light may be thrown on the etiological side of the question.

Something may also be hoped from a patient investigation of remedial agents. In syphilis and in some skin affections we have new growths of tissue which are caused to disappear by the constitutional use of drugs. The effect of arsenic in so-called sarcoma of the skin, and the fact that this same drug has, in some cases, effected or seemed to effect the disappearance of a sarcoma which had invaded the lymph glands, offers some encouragement in this direction.

Such is the beginning of this enterprise. The funds are barely sufficient for a good start, but for so good an object it is to be hoped that others will be forthcoming. In the neighboring State of New York a liberal appropriation has been made by the Legislature for similar researches. So much earnest effort cannot be without avail, and it is satisfactory to us all to feel that America is lending her hand to the investiga-

tion of this burning question. Whatever comes of it we may be sure the labor will not be wasted.

Most of us here are practitioners of medicine, men so occupied in the care of the sick that but little strength or time is left for the pursuit of purely scientific studies. Are we then mere spectators of this forward movement? I do not think so; and I wish to close this rather rambling discourse by pointing out a few of the ways in which the busy profession at large may substantially assist their brethren who are devoting themselves to research.

The mere moral support of feeling that the profession are backing them up and are appreciative of their labors and quick to profit by them is of great importance to the investigators.

The intelligence of the audience has a stimulating effect upon the teacher, and if we take an active interest in this work and keep ourselves informed of the steps gained, we shall lend the encouragement of our interest to the men working in laboratories. We shall, at the same time, fit ourselves to properly judge new ideas and shall be stimulated to accurately observe and record phenomena which pass under our eyes. It must act as an incentive to the men who are working out the higher problems of medicine to feel that any hint they are able to obtain will be at once made of practical value, or will at least be fairly tested and its value determined.

A profession thus made up of men who are in the habit of applying all known scientific methods to the study of their cases and who demand that every patient shall have the advantage of as minute an investigation as is possible, will keep the scientists supplied with material for their studies and by bringing them in contact with patients will make them in a measure sharers in the emoluments of practice.

This last consideration is no small matter, for in this country where government does not support its investigators, they must be provided for in other ways. The medical colleges supply places and salaries to a certain number, but there are many men of scientific bent who are unable to follow their inclinations because they must be sure of adequate support for themselves and families. If an enlightened profession demands the services of such men, we may be sure the supply will equal the demand. The army of investigators will not lack recruits. Many a good man will be enabled to spend his life in congenial research instead of seeking his livelihood in the routine of practice, for which perhaps he is ill fitted.

Do not understand me to disparage the practice of healing the sick or to imply that any other pursuit is higher. I only wish to point out that a man loving the laboratory may if driven into general practice prove to be a square peg in a round hole.

Lastly, it is important that the profession at large, who come in close contact with the people, should keep the community informed of the importance and magnitude of scientific work. In this way only can the proper interest be aroused and necessary endowment and support be obtained.

These are a few of the many duties devolving upon us as we enter the twentieth century. We are in the middle of the stream of medical progress and the current shows no sign of slowing. Let us do our utmost to ensure that it flows on with increasing tide and that there are no back eddies or slack water on the American side.

Original Articles.

CLOSING STATEMENT FOR THE REMONSTRANTS TO THE MASSACHUSETTS HOUSE BILL NO. 917, ENTITLED "AN ACT FOR THE FURTHER PREVENTION OF CRUELTY TO ANIMALS," BEFORE THE JOINT COMMITTEE ON PROBATE AND INSOLVENCY, MARCH 15, 1900.

BY HAROLD C. ERNST, A.M., M.D., BOSTON,
Professor of Bacteriology in the Harvard Medical School; President of the Boston Society of Medical Sciences.

(Concluded from No. 24, p. 622.)

THE Committee must remember that this bill is not aimed alone at the studies of normal and abnormal processes in the physiological laboratories, but at all inoculation experiments as well, and that these may last over a series of days, weeks or sometimes months. These inoculation experiments include all studies upon the etiology (causation) of the infectious diseases, and cannot be studied in the time that an animal will survive under ether or chloroform. Upon these experiments are based practically all the advances that have been made in sanitation of the infectious diseases, much of their treatment and the great triumphs of modern surgery in the way of safe operative procedures unattended with the risks of blood-poisoning and pus formation. Perhaps the best examples of the results obtained are the disappearance of hospital gangrene, that curse of the hospitals of the Civil War, and of puerperal fever, the fear at one time of every mother in childbirth. I believe it to be true that these two infectious processes have so completely disappeared that it is now not possible to give instruction in either of them, by actual demonstration, to the students of medicine of the day. Tuberculosis, another great curse, perhaps the greatest, of civilized communities is disappearing — without question as the result of the knowledge gained in regard to its infectious nature within the past thirty-five years by direct experimentation upon animals.

The provisions of the bill are summarized as follows:

(*a*) "The Secretary of State shall have power to grant and revoke licenses, and (*b*) all places where experiments are performed shall be registered and a detailed report of every experiment shall be transmitted to the Secretary of State." The Secretary is ready to appear before you and give you his feeling in regard to this provision; its irksome nature, in bearing heavily upon the energies of those whose time may be better occupied than in clerical work, is so manifest that it seems hardly necessary to lay stress upon it.

(*c*) "All persons licensed to experiment upon living animals must be vouched for by competent medical authorities." The bill itself specifies that the application for license must be signed by three physicians duly licensed to practise, and actually engaged in practising medicine in the State of Massachusetts, and also by a professor of physiology, medicine, anatomy, medical jurisprudence, materia medica or surgery, leaving it out of the power of any professor of pathology, bacteriology or hygiene to have any voice in the procuring of licenses for the workers in his special department. I fancy that the heads of such departments as these, and of biology in general, or the many departments of that study, would protest most vigorously against this absurd discrimination.

(*d*) "The authorized agents of humane societies in Massachusetts shall be permitted to visit any registered place at any time and without previous notice." The bill says "of any society for the prevention of cruelty to animals in the State of Massachusetts." So far as we know, this places the power of inspection in the hands of the only two societies organized for the purpose of the prevention of cruelty to animals now existing in the State — the Massachusetts Society for the Prevention of Cruelty to Animals, and the Animal Rescue League. The president of the latter has already refused to sign the petition for this bill, and no representative of the former has appeared here in its support. If this were allowed, what sort of reports would be forthcoming? Can it be expected that they would be such as would tend to allay public suspicion, or rather reports in which the inspector would be put to his utmost endeavors to detect for his employers some sort of sensational incident, some sort of impression which could be used either in their weekly paper or in the daily press, to promote the objects of the society? There could not possibly be a more ill-advised or dangerous method of inspecting this work, and we object fundamentally to anything of the sort.

These objections would hold against the New England Antivivisection Society, but that their treasurer — the only officer we have seen — has stated that the Society is "not to prosecute, but to disseminate a knowledge on vivisection." It is hardly possible that such important matters could be put in the charge of a body that conducts its avowed work as loosely as has been shown to be the case with this one.

We are told that there is a large number of people demanding this legislation, and that there are many ready to appear in its favor. As a matter of fact, the petitioners have been represented at these hearings by their counsel, and by three witnesses only, whose testimony may be summarized about as follows:

The first witness for the bill was Herbert D. Ward, but such a witness is hardly worth attention, for how can a man be worth belief who will allow himself to make the statement which closed his testimony: "I do not consider it necessary to go into a laboratory in order to find out what is going on there"?

If this is what the petitioners want, to be allowed to judge of what goes on at any given time by what has gone on in some other place at some other time, it would hardly have been necessary for the remonstrants to have taken up the time of the Committee in listening to them.

This witness brought forward certain cases of the effects of vivisection upon the "finer feelings"; this at Cornell and at Matteawan. We have not attempted to find out the state of the case at Cornell, but if it is the same as at Matteawan, it would hardly be necessary.

The witness stated: "At Matteawan, a public school teacher dissected a cat. The animal was not under extreme anesthesia, the feelings only partly dead, and the parents of the children of that school made such a fuss that the teacher was obliged to withdraw."

One of the students at the Harvard Medical School heard this testimony given, and as he was born in Matteawan, and knew something of the place, was sufficiently interested to make some inquiries on this matter. I beg to present to you the following letters in regard to the Matteawan matter, brought forward by this person — permit me to remind you — as an authentic instance of the effect of vivisection (the dissection of *living* animals) on the pupils:

Boston, Mass., March 5, 1900.

Superintendent of Schools, Matteawan, N. Y.,

Dear Sir: — At a hearing before the Massachusetts Legislature on a bill "For the further prevention of cruelty to animals in Massachusetts," introduced by the New England Antivivisection Society, I was surprised to hear the following statements made: "At Matteawan a public school teacher dissected a cat; the animal was not under extreme anesthesia, the feelings only partly dead." The last time that I was at home I heard of this case, but if my memory serves me the cat was dead. I should be very much obliged if you will write me a brief statement of the facts.

Yours truly,
Walter R. Brinckerhoff.

Matteawan, N. Y., March 6, 1900.

Walter R. Brinckerhoff,

Dear Sir: — Three years ago a cat was dissected before a class of High School pupils in Matteawan. The cat was *completely and thoroughly dead* before it was taken to the class-room.

Very truly,
G. R. Miller.

Boston, March 8, 1900.

Mr. G. R. Miller,

Dear Sir: — Your letter about the Matteawan cat case received. Do you know of any other occurrence that could have given rise to the statements that I quoted in my last letter?

Thanking you for prompt answer to my letter, I remain
Yours truly,
Walter R. Brinckerhoff.

Matteawan, N. Y., March 9, 1900.

Mr. Walter R. Brinckerhoff,

Dear Sir: — No dissection of a cat or of any other animal has ever taken place in the schools of Matteawan, except in the one case referred to.

It has always been our custom to bring before our classes some parts or organs of animals for the inspection of the class. This is a common practice in schools. The parts usually taken before the class are those that can be commonly obtained at any meat market.

There is only one case, aside from the one cited, from which any idea such as stated in your first letter could be obtained. It was as follows: One year after the dissection in the school, the teacher of science dissected a cat at her own home and brought the vital organs before her class in school on the following day. These are the plain facts. Any other statements are either distortions or falsehoods.

Appreciating your interest in the case, and hoping to learn the results of your efforts, I remain

Very truly,
G. R. Miller.

Following this witness, whose testimony was closed by the remarkable statement given above, that he did not need to be an eye-witness to know what was going on, came the treasurer of the New England Antivivisection Society, J. M. Greene, the only officer of the Society we have yet seen. The testimony of this witness has been shown to be inaccurate by many of the gentlemen who have appeared here to remonstrate against the proposed legislation, but I should be glad to add something to that testimony. He begins by saying that he has no personal knowledge of experimental laboratories, but goes on to say that personal evidence is impossible. This has been shown not to be the case to any properly qualified person. The wit-

ness made the same charges of cruelty in regard to the experiments on animals that have been flung about so freely in this and other antivivisection agitations. Now cruelty in law means an act inflicting severe pain and done with wilfulness and malice. I can assure the witness that the remonstrants listened with much interest to hear the specific instances of cruelty that he would support with evidence, but none were forthcoming, and perhaps the Committee will remember that when Dr. Porter asked this witness whether the experiments he referred to of Dr. Porter's were meant by him (the witness) to be specific instances of cruelty, and whether the witness so charged, the answer of the witness to this specific question was not secured. I wish to point out that such a specific answer in regard to a specific case would be a more serious matter than general statements. This witness repeated the old charge that animals are not anesthetized, which has been sufficiently answered already, and reiterates the old assertion that chloral is in no sense an anesthetic. Anesthetics and narcotics both attain the desired end, the doing away with the sensibility to pain; chloral will do this as effectively as ether, as has been stated many times.

That I have not said this first is evidenced by the following from *Anesthesia*:[1] "I trust that I may be pardoned if I pause here for a moment to correct a misconception which does not exist among well-informed medical men, least of all among practitioners of medicine, but which plays a considerable part in antivivisection literature. I refer to the distinction there made between the use of anesthetics and that of narcotics for the purpose of rendering animals insensible to pain. So far as the point in question is involved, this distinction is ridiculous, and seems to be based upon a misunderstanding of some old physiological experiments. For prolonged experiments, it is often advantageous to place the animal in the sleep induced by morphine or chloral, instead of that of ether or chloroform. These drugs are administered in much larger doses and often in different ways than is customary in human beings. That under these circumstances the animal is rendered insensible to pain is a fact the knowledge of which might have been gained from ordinary medical experience."

The witnesses' more general statements that vivisection is of slight use, or that the medical profession should not be allowed to control it, would seem to have been sufficiently answered. Certainly in the last case, — an unscientific body of ill-informed agents are not the persons to entrust its management to. The witness's further assertions that the present laws do not cover the case, that the advance of medicine of late years is not real, that serum medication has failed, and that the study of bacteriology has done nothing have been considered by other speakers or myself.

So, too, after what has been said, it seems hardly necessary to refer again to his statements in regard to the antitoxin of diphtheria, but it would really seem to be advisable for the witness to take some other than the *Medical Brief* for his authority before making the statement that it is the carbolic acid in the diphtheria antitoxin that does the benefit, when this is a statement that he could have at any time known to be untrue so far as this State is concerned, by a simple inquiry, which would have told him that no carbolic acid has ever been used in such antitoxin, made either by the Boston Board of Health or the State Board. Such inquiries might also have kept him from the insult offered to the State Board of Health in the implication that their efforts to secure a cheap and reliable product of this material were due to their desire to be on the side of the latest fad.

In other words, this witness takes the very easy ground that when his opponents bring forward evidence that is not to be pushed out of sight or disproved, the only answer that is to be made is a charge of false witness, which may be a temporarily happy frame of mind, but is an exceedingly dangerous one.

Finally, gentlemen of the Committee, we come to the testimony of the last *successful* witness for the supporters of the bill, A. Westcott, a professional agitator according to his own admission; one who has been for eight years doing nothing but getting up such evidence as he could on the subject of vivisection, under salary all the time; a non-resident, not a citizen of this Commonwealth or country, and not even a man with a scientific training; one who calls Charcot a brain surgeon. It was no evidence that this witness offered, but an oration that was evidently well in hand until the Committee itself felt it necessary to disturb its smooth-flowing sentences, that withal sounded strange and somewhat uncouth to our unaccustomed ears. This witness asserted that nine-tenths of the experiments were made in a spirit of "curiosity." A closer acquaintance with the definitions of the word would assure him that one of them is as follows: "The desire to see or learn something that is new, strange, or unknown;" so that after all he came nearer the truth than perhaps he intended, that the desire of all experimentation in a new field *is* to see or learn something new, strange, or unknown, but of value to the human race.

To such a witness it would do no good to say that anesthetics (or narcotics) are usually used in experimentation on animals, as has been here testified, nor would it be of value to refute his statement that the facts learned have no bearing in man, but it will be of value to remind the Committee that this is not the case, and that many processes are the same in man and some of the lower animals, or very similar, so that close analogies can be readily drawn by the study of these processes in animals. Does not the witness know of, or does he mean to deny, the transmission of various infectious diseases from animals to man or to each other. What about rabies, by the bite of a dog (usually); diphtheria, from pet animals; tuberculosis, in cattle; plague, by rats and other house vermin and insects, flies, etc.; anthrax (in man called malignant pustule, woolsorter's disease, and so on); glanders, in the groom from an infected horse; actinomycosis, from infected grain, and possibly meat and milk; malaria, undoubtedly carried by mosquitoes; typhoid, by flies at Chickamauga, and hog cholera, foot and mouth disease, bacillus typhi murium and the experiments in Thessaly? Of course if all these great epochal studies are to be called "nothing," then "nothing" is of value to some of us, but argument is useless.

The object of the petitioners is said by this witness to be not to retard "science" but to eliminate barbarities, so that then the experimenter may devote

[1] Welch, p. 68.

himself to "true science," whatever they may mean by that. I would again call the attention of the witness to the definition of words, and inform him that (1) "science" means knowledge, comprehension, or understanding of facts or principles, and (2) knowledge gained by systematic observation, experiment and reasoning. I regret I cannot trust his judgment to answer the question, but perhaps the Committee will tell us what higher or truer science there is than that which benefits the human race.

I should like to bring to the attention of the Committee an editorial from the *Boston Herald* of Thursday, March 8, 1900, the authorship of which is entirely unknown to me, and from which I will quote the last paragraph: "We must take the universe as we find it. It is one in which life is constantly destroyed, doubtless for the benefit of other lives. As the highest type of the animal species, we at least need not be consciously cruel, but we should be blind to the teachings of nature and invite race destruction if we did not seek to strengthen our species by endeavoring in every way to provide for it safeguards against the ravages of the lower types of life."

I wish before closing, gentlemen, to contrast the character of the evidence brought forward, and by whom presented. On the one hand the three individuals whose testimony for the bill I have just spoken of; on the other, against the bill, the words of experts, actually engaged in the work of which they speak, of practitioners of medicine using the results of that work, of the greatest educational force this country has known, of the clergy, both from the general point of view, and from the results seen in their own daily life, and of members of the community who have experienced the benefits of the results of animal experimentation, and also knew what was being done for them. It seems to us that we are justified in our protest against this bill as unnecessary and unjust.

I thank you, gentlemen, for the courtesy you have extended to me.

(In opposition to this bill there appeared: Dr. H. P. Bowditch, professor of physiology in the Harvard Medical School; Dr. W. T. Sedgwick, professor of biology in the Massachusetts Institute of Technology; Dr. W. T. Porter, associate professor of physiology in the Harvard Medical School; Dr. Theobald Smith, professor of comparative pathology in the Harvard Medical School; Dr. W. T. Councilman, professor of pathological anatomy in the Harvard Medical School; Dr. John H. McCollom, superintendent of the South Department of the Boston City Hospital; Mr. and Mrs. Arthur Astor Carey, the Rev. A. A. Berle, A. Parker Browne, Esq., to relate personal experiences; Dr. J. C. Warren, professor of surgery in the Harvard Medical School; Dr. H. L. Burrell, assistant professor of clinical surgery in the Harvard Medical School; Dr. James J. Putnam, professor of diseases of the nervous system in the Harvard Medical School; Charles W. Eliot, President of Harvard University; William Lawrence, Bishop of Massachusetts; Professor Wilcox, of Wellesley College; Prof. J. S. Kingsley, of Tufts College.)

An Automobile Ambulance. — The new automobile ambulance of St. Vincent's Hospital, New York, the first of its kind in the city, made its first regular trip on June 13th. It cost $3,000, and is the gift of Mr. Edward Kelly.

THE LAW OF DYING DECLARATIONS.[1]

BY M. J. SUGHRUE, ESQ., BOSTON.

The rules of evidence relating to the competency of statements of dying persons are a branch of the law with which physicians are frequently called upon to deal. A brief recital of some phases of this branch of the law, the scope of which has recently been extended by statutory enactment, is here attempted.

It is a general rule of law that statements made by third persons are not admissible in evidence, but are within the class of hearsay evidence, and are usually excluded. To the rule excluding hearsay evidence there are some exceptions; among them are dying declarations. Dying declarations are statements of material facts concerning the cause and circumstances of a homicide made by the victim, under the solemn conviction of impending death.

There are certain other declarations of dying persons which may not be admissible under the dying declaration rule, but which may be competent as part of the *res gestæ* (which are the circumstances of the transaction) on the ground of their natural, contemporaneous and explanatory connection with the main transaction. To be admissible under the latter rule, the declarations must be so nearly contemporaneous with the main fact as to be part of the *res gestæ*, but need not have been made under a conviction of impending death. On the other hand, to be admissible under the dying declaration rule, the declaration need not be part of the *res gestæ*, but must have been made in the consciousness and expectation of immediately approaching death.

Certain declarations made in the presence of the defendant are also competent for the purpose of showing defendant's response, when charged with causing the injury done to the deceased; the admissibility of this class of evidence depends upon the conduct, presence and response of the defendant. It is not necessary to the admissibility of dying declarations that the defendant should be present when they are made. Confessions, admissions and declarations are words frequently used interchangeably, but are each technical terms of distinct significance. A confession is a statement by a person of his agency or participation in a crime. An admission is an acknowledgment by a party to a suit of the truth of some incidental fact or facts. Confessions and admissions are made by parties to the indictment or suit; declarations are made by third parties.

An examination of the law of personal statements generally would involve a broad inquiry of no special interest from a medico-legal standpoint and will not here be attempted; but that branch of this law which relates to dying declarations is alone considered.

A fuller statement of the rule relating to dying declarations than the one hereinbefore given is this: Where a defendant is on trial for homicide, the declaration of the person whom he is charged with having killed, if made while *in extremis* and under the solemnity of a conviction that he was at the point of death, and relating to matters of fact concerning the homicide which passed under his own observation, may be given in evidence.

The reason for the rule excepting dying declarations from the rule against hearsay evidence is that the

[1] Read before the Massachusetts Medico-Legal Society, February 7, 1900.

solemnity of the circumstances under which such declarations are made, naturally constitutes a guarantee of their truth equal to that which is afforded by the customary oath.

The further reason for the rule is in the necessity of the case; the victim of the homicide having passed away, and as there may be no other witness to the transaction, in order that the malefactor may not go unpunished, the strongest reasons of public policy require the admission of this testimony.[2] It was objected that the admission of this testimony contravened the constitutional provision that the accused should be confronted by his witnesses face to face, but Chief Justice Shaw declared that dying declarations are admissible notwithstanding the Twelfth Article of the Declaration of Rights, that every subject shall have the right to meet the witnesses against him face to face, and this rule has been affirmed so often that the question is no longer open.[3]

In order that a dying declaration may be given in evidence the following conditions must be shown: That the declarant must have been conscious of impending death; that death must have occurred; that the statement must relate to the crime and be a description of the crime itself, and its manner of commission and of the person who committed it.

Even if the death was impending, if the declarant did not so believe, the declaration would not be competent; all hope of recovery must have been abandoned, and the declarant must be without hope or expectation of recovery.[4]

It is not necessary that declarant should be actually breathing his last; even though he lived some time, the declaration is competent if made under a sense of impending death.

It has been held that statements made by the deceased while he yet entertained hopes of recovery are admissible if they were reaffirmed by him after he lost all hope.

FORM AND MANNER OF GIVING DECLARATIONS.

The form of the declaration is immaterial; it may be made orally or in writing. It is not necessary that a declaration should be expressed in words; it may be communicated by signs. It was said by Chief Justice Shaw, in Commonwealth v. Casey cited above, that "If the injured party had but the action of a single finger, and with that finger pointed to the words 'yes' and 'no,' in answer to questions, in such a manner as to render it probable that she understood, and was at the same time conscious that she could not recover, then it is admissible evidence."

It will be sufficient if the declaration is taken down in writing by a bystander, and the writing then read over to the deceased, who assents to its terms and affixes his signature. But it is not essential that it be taken down in writing or that it be signed, but it will be useful so to do to preserve the evidence.

If the statement is carefully drawn and is a fair recital of the declarant's statement, it is not fatal to its competency if the exact words of the account of the case are not used. The declaration is admissible even if brought out by means of questions. It is not necessary that the declarant should be sworn. Dying declarations are admissible in favor of the accused as well as in favor of the Commonwealth.[5] But in each case the declarant must be the person who was the victim of the homicide.

CASES IN WHICH DYING DECLARATIONS ARE ADMISSIBLE.

They are admissible only in cases of homicide, and in such additional cases as have been provided for by statute.[6] By statute, abortion cases have been included.[7] Dying declarations are admissible only where the death of the declarant is the subject of the inquiry; they are not admissible to prove any other death. On an indictment for murder it is not competent to introduce the statements of another person that he killed the deceased.[8] Defendant in a case tried in New York offered to introduce a letter which might be regarded as containing a confession of another person that he had committed the murder; the evidence was excluded.[9]

Where three persons are jointly indicted for murder, and one of them is tried separately, it is not competent for him to give in evidence a conversation between the other two when they were alone, inculpating themselves, and exculpating him from all participation in the crime.[10]

On an indictment for an assault with intent to murder, it was held that although the accused might exculpate himself by showing that another was guilty, yet this rule goes no farther in favor of the accused than to allow him to show another's guilt by some appropriate evidence directly connecting that person with the *corpus delicti*. Therefore mere disconnected threats and declarations of third persons are inadmissible.[11]

Where the defence of a criminal charge is that a third person committed the offence, the confession of such third person, made after the offence and not part of the *res gestæ* is not admissible in evidence.[12]

The testimony of the declarant may be discredited as that of a witness taking the witness stand and testifying. It may be shown that the declarant was not mentally capable of making a statement, that his reputation for truth was bad. The statement of the dying person must be of matter competent; it must not be merely an expression of opinion, it must be a statement of facts which could be testified to if the declarant lived and was a witness at the trial.

It is competent for the defendant to introduce testimony to show that the deceased has made contradictory statments, and it is competent for the government to introduce testimony corroborative of the dying declaration.

In passing upon the weight to be given to dying declarations the jury have a right to consider all the circumstances under which it was made, and all the conditions by which the dying person was surrounded, and the state of mind of declarant, as shown by all that was said and done. Conduct, deportment, condition, all should be noted by the person who is to be a witness. Declarant's conduct in saying farewell to his relatives, in making such provision as is made by persons about to die; if the declarant is a Catholic, if

[2] Commonwealth v. Casey, 11 Cushing, 421.
[3] Commonwealth v. Casey, 12 Cushing, 246.
[4] Commonwealth v. Bishop, 165 Mass., 148.
[5] Commonwealth v. Bishop, 165 Mass., 148.
[6] Commonwealth v. Thompson, 159 Mass., 56.
[7] Statute of 1889, chapter 100, Laws of Massachusetts.
[8] Wharton on Homicide, Section 693.
[9] Greenfield v. People, 85 New York, 75.
[10] United States v. Douglas et al., 2 Blatchford, 207.
[11] State v. Baudet, 53 Ct., 536; West v. State, 76 Ala.
[12] Peck v. State, 86 Tennessee, 259.

he receives extreme unction, this is of importance as indicating the state of mind. It will be found a most useful practical rule in these cases first to ascertain the state of mind of the dying person, and after that an expression by him that he has no hope of recovery, then to listen to a recital of the story of the crime.

It is because of a failure to proceed in this way that physicians frequently obtain an account of a crime which cannot be used in evidence, and it is more often because of inadvertence than want of knowledge; but the result is equally disastrous so far as a successful prosecution is concerned. Particularly is this true in abortion cases, in many of which, apart from the evidence obtained at the autopsy, there is no testimony save the dying statement of the person operated upon, which by reason of the carelessness or ignorance of the person hearing the statement is worthless as evidence.

Another form of declaration of deceased persons made competent evidence by a recent statute which will be likely to call physicians into court to some extent hereafter is the law passed in 1898, Chapter 535 of Massachusetts Laws; this will be used in civil cases only; it is entitled, "An Act Relative to the Declarations of Deceased Persons." It reads: "No declaration of a deceased person shall be excluded as evidence on the ground of its being hearsay, if it appears to the satisfaction of the judge to have been made in good faith before the beginning of the suit and upon the personal knowledge of the declarant."

In closing this paper it is proper, perhaps, to say that in speaking on the occasional failure of some person to comply with the exact legal requirement of the particular situation, it is with no desire to criticise, but on the contrary with a full recognition of the aid received from physicians and also of the fact that in most instances every requirement of the rules of evidence is complied with. The abortionist, the poisoner and the murderer would often have very little to fear from the best efforts of lawyers seeking to prevent crime were it not for the skill, the watchfulness and the fearlessness of the trained minds which trace the evidence of subtle poison or the course of the murderer's bullet. Without this assistance, in many instances the law would be helpless, and the fact that detection is made certain by the attainments of these scientific men restrains the criminal by bringing close to him the certainty of detection.

A CASE OF EXTRA-UTERINE PREGNANCY.[1]

BY FRANK HOLYOKE, M.D., HOLYOKE, MASS.

ON December 5th, at 2 A. M., I was summoned from police headquarters to view the dead body of a woman who, though unmarried, called herself Mrs. Eugene S., of Boston. She had been visiting a friend in Holyoke for the previous three days. Her history and habits for the past sixteen years had not been a credit to her sex. The friend whom she was visiting stated that the deceased had visited her on the 6th of last July and again on the 15th of September, on each occasion complaining of considerable abdominal pain. On this her last visit, she reached her friend's house December 1st, at 11.20 P. M. On the second day she went out in the morning and did not return until evening; on the third she lay down most of the day, and on the fourth she went out after dinner and came back at 4 P. M., complaining of terribly severe pain in the belly. At 8 o'clock she began to grow weak, very restless and pale, calling for water continually. She was conscious until near the end; refusing to see the priest or physician. She died at 1.15 A. M., three-quarters of an hour before I viewed the body. The body was still warm. There was at this time no rigor mortis.

On making a vaginal examination I was unable to reach the os, but through the anterior vaginal wall, which protruded forcibly into the vagina, I could very readily feel ballottement of a floating body of a size which would indicate that she was at least five months pregnant. The posterior cul-de-sac bulged prominently as though filled with fluid. There was no trace of blood in the vagina nor history of hemorrhage. Through the very thick abdominal wall a tumor could be felt rising from the pelvic cavity as high as the umbilicus.

The body was removed to an undertaker's warerooom, where, nine hours and a quarter after death, the autopsy was made. The body was that of a woman thirty-six years of age, weighing about one hundred and sixty pounds; the skin surface was pale; there was marked absence of livid spots; the belly was much distended. The abdominal walls were very fatty. Large, black, tarry clots covered the omentum, and the abdominal cavity was filled with clots and serum. Beneath the omentum there was found what looked, at first sight, like a large, ruptured ovarian cyst with a very vascular wall, to which the omentum and intestines were extensively and firmly adherent. This cyst lay between the folds of the right broad ligament. It reached as high as the umbilicus. The cyst wall was ruptured in the upper anterior part.

The uterus was pressed high up out of the pelvic cavity to the left, which accounts for my inability to find the os by vaginal examination before the autopsy. This abnormal position of the uterus was produced by the combined pressure of extravasated blood in the posterior cul-de-sac and the forcible bulging of the tumor anteriorly. I doubt if the uterus was so hard to reach prior to the rupture. The uterus was six inches long, the cervix softened and filled with mucus. The body of the uterus was soft and thickened proportionately to its size, though the enlargement was more in the long axis. The lining of the uterus was softened and very pale.

The tumor was ruptured at the site of the placenta. In breaking up adhesions the sac wall tore readily, showing, beneath, the amnion, unbroken and adherent throughout to its covering, which was composed of the anterior and posterior layers of the broad ligament; the pregnancy being tubal in origin, and primary rupture having occurred in the early months. The amnion contained a six months fetus, lying transversely with its breech toward the right ilium.

I could find no hematoma or other evidence of earlier hemorrhage, though such probably took place to some degree at the time of the primary rupture of the tube into the broad ligament; in such a case the hemorrhage is usually less than when it occurs in the abdominal cavity, and the fetus is more likely to live and to continue developing until destroyed by secondary hemorrhage into the placenta, or into the general peritoneal cavity by a secondary rupture of the sac.

[1] Read before the Massachusetts Medico-Legal Society, February 7, 1900.

The pelvis of the right kidney was very much distended, as was also the ureter, and this was caused by pressure of the tumor and its firm adhesions. The lungs were perfectly healthy. The gall-bladder contained one calculus. All other organs of the body showed a tendency to fatty degeneration.

She had been treated last September for what was pronounced as rheumatism in the right buttock and thigh, which, however, was probably a mistaken diagnosis, as her regular physician tells me that she had never suffered with rheumatism before. But many of these cases of extra-uterine pregnancy complain of intense pain following along the course of the sacral-plexus distribution.

With apology, I add to my report of this case a few notes from some of the latest literature on the subject, which, being of interest to me, will, I hope, not weary my listeners; for, with the exception of appendicitis, nothing seems to have interested the surgeon and gynecologist more than this subject during the past few years; and while they are discussing the treatment and proper time for operation it behooves us to consider the subject from its medico-legal side, if in a hasty review of a few of the peculiar anomalies which interest us, we can find some facts or theories to work from which may increase the importance of this subject in forensic medicine.

Most writers believe that it has been proved that the normal place of impregnation is in the tube. How much, then, may we be helped by a review of the supposed causes of the occurrence of tubal pregnancy? Some authors think that the larger percentage of these cases occurs among the lower classes, attributed chiefly to their malnutrition; while others believe that the hard work or straining at heavy lifting is a chief cause of arresting the ovum in the Fallopian tube. But we read that other possible causes are fright or shock; and that catarrhal or other inflammatory diseases of the tube, or any diminution of its lining epithelium, or any mechanical obstruction in the nature of new growths within the tube, or pressure from abdominal or pelvic tumors, have also been demonstrated as causes of the arrest of the ovum in the tube.

Dr. T. A. Stoddard,[2] however, presents the history of a few cases to illustrate what he considers a plausible theory, that the large majority of cases of tubal pregnancy, if not all, are impregnated just prior to a menstrual period.

It has been considered that, as a rule, tubal pregnancy follows a sterility of some years, but to this rule there are many exceptions. It occurs both in multiparæ and in those who have never given birth, and with many complications.

We find, for example, cases of tubal pregancy occurring two or three times in the same individual. Tubal twin gestation has also been reported. A number of cases have been collected of ovarian or tubal pregnancy together with normal uterine pregnancy; "the mother, in one case, being delivered at full term of two healthy, well-developed children."[3]

In fact, extra-uterine fetation carried to maturity is not exceptional, and laparotomies performed near the end of gestation with living extra-uterine child are no longer rare, but "the fruit is not only short-lived but deficient in development,[4] both physical and mental."

I would say that if our old and beloved instructor in anatomy were among us, Dr. Oliver Wendell Holmes, he might explain a reason for this deficient development of these record-breakers of our genealogical tree, for I well remember in one of his lectures, in referring to the calibre of the Fallopian tube, he straightened himself up to his full height, which was indeed majestic, when he spoke with emphasis, and looking very seriously at the class said: "Just here, gentlemen, I want you to understand that not one of you is any better than I am, for we have all passed through the sixteenth of an inch."

The diagnosis is often very difficult, but has been made before operation as early as the second week, although for a diagnosis to be made before the fourth or fifth week is very unusual, even for the most expert gynecologist. Primary rupture occurs more often within the first three months, most frequently in the second and third. However, it may take place in any month.

Cessation of menstruation is not always a symptom of extra-uterine pregnancy; but the menstrual irregularities may induce us to suspect the possibility of its existence. In case of rupture and the throwing off of the decidua from the uterus, we have symptoms which closely resemble a miscarriage. It is advisable that the physician examine the patient with the possibility of finding a tubal pregnancy. In a case of hematocele this also becomes our duty. Hemorrhage may occur by rupture of distended vessels upon the surface of the sac.

This completes the few points which occur to me as of special interest to the medical examiner in connection with a report of the specimen. But I ask myself of what immediate value, medico-legally, is the autopsy of a case where the history and view, together with external and vaginal examination, all point to rupture of an ectopic sac, unless we may thereby help to solve some question connected with the administration of justice? May we not expect to discover approximately at what time she conceived? Can we not help to prove or disprove an attempted abortion? Or may we not be the means of freeing a fellow-practitioner from suspicion of malpractice, as did Dr. Flavian Krug in an interesting case where the physician in charge was believed to have given poison by mistake; the death of the patient from rupture of the sac unfortunately following his hypodermic almost instantly?

Such and possibly other questions may arise in a given case. But the most valuable notes on this specimen you will now have the pleasure of listening to from Dr. F. W. Whitney, who has carefully examined and prepared it for the Warren Museum, as a peculiarly interesting addition to the study of this subject.

ANATOMICAL REPORT BY DR. W. F. WHITNEY.

The specimen consists of the uterus and adnexa. The uterus is enlarged, the extreme length 14 centimetres. The wall is thickened, the cervical portion measures one centimetre, the fundus measures three and a half centimetres, and the breadth of the fundus is eight centimetres. The interior of the uterus is lined with a soft, slightly shaggy and irregular membrane varying in thickness from two to four millimetres and was somewhat folded. The cervix is dilated and filled with tough mucus, the glands about the orifice being large and distended with the same material.

[2] American Gynecological and Obstetrical Journal, January, 1897.
[3] H. Ludwig: Wien. klin. Wochensch., July 2, 1896.
[4] L. E. Frankenthal: American Gynecological and Obstetrical Journal, September, 1896.

On the left side the ovary and tube are normal. On the right side the tube is normal for a distance of a few centimetres and then is lost on the surface of a sac 21½ centimetres in diameter.

There are no adhesions between the uterus and the tumor, which is cystic in character and lies between the folds of the broad ligament. On the upper part the covering is more or less torn and reveals a shaggy mass which is divided into two parts — one measuring about seven centimetres, in which is a considerable hemorrhage; and the other about five centimetres in diameter, which is pale and bloodless. This shaggy coat is partly lifted up and reveals a fetus of apparently about the sixth month, lying in an unruptured amniotic sac. The fluid surrounding the fetus is of a dark bluish-red color. No ovary could be detected on this side.

The diagnosis is a retroperitoneal pregnancy originating in the tube, and apparently about the sixth month. A decidua was present in the uterus.

THE MARKS PRODUCED BY PISTOL SHOTS.[1]

BY G. DE N. HOUGH, M.D., NEW BEDFORD, MASS.

The object of this research was to ascertain what inferences could be drawn as to calibre of weapon and distance from which it had been fired from the marks produced on the skin or clothing.

The material used was as follows: One .22-calibre revolver of unknown make capable of using either long or short cartridges. With this I used Winchester Co.'s .22 short cartridge containing 3 grains of powder and 30 grains of bullet; the same make smokeless cartridge containing 1½ grains powder and 30 grains bullet; the Union Metallic Cartridge Co's. .22 short and .22 long cartridge whose exact contents of powder and bullet I was unable to learn. All .22 cartridges are rim fire, and it is not probable that the Union Co's. differs much in charge from the Winchester's. Judging from the mark, however, the former uses a coarser grained powder. In .32 calibre I had several pistols: (1) A Young America, double action, centre fire, with a 2-inch barrel firing a short .32 U. M. C. Co.'s cartridge with 10 grains of powder and 88 grains of bullet; (2) Hopkins & Allen's Mfg. Co.'s Dictator, single action, rim fire, 3-inch barrel, with a Winchester .32 short cartridge, containing 9 grains of powder and 82 grains of bullet; (3) Hopkins & Allen Co.'s X. L., double action, rim fire, 3-inch barrel, with Winchester .32 short, containing 9 grains of powder and 82 grains of bullet, and U. M. C. Co.'s .32 long, containing probably 13 grains of powder and 90 grains of bullet (this is what their long centre fire, .32 and W. Co.'s long rim fire .32 contain); (4) Iver-Johnson Arms & Cycle Works, double action, tip up, automatic ejector, centre fire, 3-inch barrel, with U. M. C. Co.'s .32 short, containing 10 grains of powder and 88 grains of bullet, and also with the U. M. C. Co.'s .32 short smokeless, containing about 4 grains of powder and 90 grains of bullet. In .38 calibre I had: (1) American Bull-dog, double action centre fire, 2½-inch barrel with U. M. C. Co.'s short .38, containing 15 grains powder and 146 grains bullet; (2) a Belgian imitation of Smith and Wesson's Automatic Ejector, double action, 3⅝-inch barrel, with same cartridge as in previous pistol, also with the .38 central fire S. & W. cartridge of the United States Co., of Lowell; (3) a Colt's single action, 7½-inch barrel with U. M. C. Co.'s .38 long Colt's, centre-fire cartridge, containing 18 grains of powder and 150 of bullet. I had finally an old-fashioned Derringer of .41 calibre and 2⅝-inch barrel requiring a .41 short, rim-fire cartridge. I had great difficulty in obtaining ammunition for this pistol, and that which I did get was without label on the box, so I cannot tell by whom it was made. The W. Co.'s cartridge of this size contains 13 grains powder and 130 of bullet. It is probable that the cartridges I obtained contain about the same charge. I regret very much that I was unable to procure any pistols of larger calibre and that my outfit was so limited, and I wish to point out here, once for all, that my conclusions are based on experiments with the above-mentioned weapons and ammunition, and refer only to the marks produced by them. Whether any modification of my conclusions will be rendered necessary by experiments with other calibres and ammunition, I of course cannot say.

Method of experimentation. — I had an apparatus constructed which would enable me to measure the distance of the muzzle of the pistol from the target within one-eighth of an inch and at the same time hold the pistol securely while not preventing the recoil or the upward jump of the muzzle at the instant of firing. As targets, I used a variety of things — various sorts of leather, cloth and paper. Whatever material I used, the character of the mark was the same. I used white blotting paper most extensively because the mark could more easily be seen, and because it was my opinion that powder grains would embed themselves in it about as easily as in the human skin. Now while the character of the mark is the same, its appearance varies much with the different materials, so that, given a powder mark on a piece of clothing, I should consider it extremely advisable to confirm one's opinion as to the weapon and the range by actual experiment with similar pieces of cloth.

Results. — The same pistol at the same range with similar ammunition produces the same mark. The mark consists of (1) the bullet hole; (2) the burn; (3) the smut; (4) the tattoo. Beyond a certain distance, a pistol mark consists only of the bullet hole. This distance depends upon the calibre of the weapon and the size of the powder charge. Thus for a .38 long Colt, central fire, which is loaded with 18 grains of powder and 150 grains of lead, fired from a Colt's revolver of 7½-inch length of barrel, I could get no mark except the bullet hole at a distance of anything over 11 feet. As we approach the target, the tattoo begins to develop. This consists of unburned powder grains and droplets of the grease with which the bullet is lubricated. With the pistol and ammunition above mentioned the tattoo is well defined at a range of 7 feet, but the individual grains are widely scattered. Further diminution of the range results in a condensation of the tattoo, the individual grains getting closer together, the whole mark covering a smaller area, and there being a larger and larger number of the grains close to the bullet hole. It occurred to me to count the grains in the marks by means of the device which I now show you. In general it is undoubtedly true that there are more grains

[1] Read before the Massachusetts Medico-Legal Society, February 7, 1900.

between the centre and the 1-inch circle than between the 1-inch circle and 2-inch circle, and more between the 1-inch and 2-inch than between the 2-inch and 3-inch, and so forth. The progressive condensation at progressively shorter ranges is still more strongly brought out by counting the number of grains in equal areas, situated half an inch, an inch, etc., from the centre.

I hoped that the numbers found might enable one to determine definitely the distance at which the shot had been fired, but the variation in size of the grains is too great and there are other difficulties which seem to me insurmountable at present. Arriving at a certain distance, which with the pistol and ammunition above mentioned is 15 to 18 inches, the aggregation of powder grains immediately about the bullet hole has become so dense that the mark has a distinct black spot at its centre which I call the *smut*. At the same time the burn becomes visible. Continuing to diminish the range the smut and burn become larger and larger and the visible tattoo smaller and smaller, until finally there is nothing but the smut and burn to be seen. At the same time the form of the mark becomes more and more perfectly circular, until with the muzzle of the weapon in actual contact with the target we have nothing but a round black mark.

As long as we use ordinary powder, this is the series of changes which the mark undergoes, no matter what the weapon or ammunition may be. The variable parts of the mark (smut, burn and tattoo) are produced by that portion of the powder charge which is not completely burned and one would naturally expect that with any one pistol the size of the mark would depend upon the quantity of powder in the charge and that the distance at which a certain kind of mark is produced would depend upon the same element. This is not true, however, as is shown by a comparison of the series of marks produced by short and long .22 or .32 cartridges; at any rate when the difference between the charges is as little as in these instances no difference in the mark is manifest.

In the case of the long and short .22, there is a difference of 40 per cent. in the respective charges of powder and in the case of the .32 the difference is 44 per cent.

The difference in the mark produced by pistols of different calibre is very noticeable, the size of the mark increasing with increase of calibre and the range at which the different elements of the mark are developed differing considerably. With pistols of the same calibre but different length of barrel different marks are produced at the same distances but the differences are by no means as great as one would suppose, as may be seen by a comparison of the marks produced by the .38 Colt with 7½-inch barrel with those of a .38 American Bull-dog with 2½-inch barrel.

There are about 12 different calibres in use, varying from .22 up to .50. Some of these, namely, .22, .32 and .38 can be obtained in almost any city or town, the others, except by accident, only in large cities unless they are specially ordered. The possibility, however, of one of these unusual calibres being used in any case can never be excluded and neither can we say beforehand that an assailant may not have somehow come into possession of one of the many forms of obsolete muzzle-loading pistols, though the latter can hardly be found, that is, if you want one, except in a museum.

I regret to say that it is not possible to determine with absolute accuracy, from the mark alone, what was the calibre of the weapon used or the distance from which it was fired. Still these points can be determined within certain limits, the calibre from the size of the mark and the distance from its character. In my experiments, if the mark is wholly a smut, with no tattoo zone, the shot was fired at a distance of not over 6 inches. If the mark consists of a tattoo with a distinct smut at the centre, then the distance at which the shot was fired was not over 2 feet. If the mark consists of the bullet hole alone, then the range was not less than 4 to 6 feet if a .22 calibre was used, 7 to 9 feet if a .32, and 9 to 12 feet if a .38 or 41.

For practical purposes one must have a library of experimentally produced marks as standards, and by comparison of the mark actually found with these standards, helped in some cases by a little additional experimenting, a sufficiently close approximation to the calibre and range of the weapon used can ordinarily be made.

Reports of Societies.

MASSACHUSETTS MEDICO-LEGAL SOCIETY.

JULIAN A. MEAD, M.D., SECRETARY.

THE Society met in Boston, February 7, 1900, with a full attendance of members, and the President, DR. B. H. HARTWELL, in the chair.

After the transaction of routine business, M. J. SUGHRUE, ESQ., of Boston, read a paper on

THE LAW OF DYING DECLARATIONS.[1]

DR. WHITNEY: I should like to ask if in the case of a dying declaration which has been made before the person admits his belief that he is in this extreme condition, he then reaffirms the story, after his conviction is expressed, would this be sufficient?

MR. SUGHRUE: Quite so; if the reaffirmation is made with sufficient distinctness, and it is a part of the statement. The danger is in the strict requirement to conform to the rule of law. The objecting lawyer might say that the reaffirmation did not reaffirm that the statement was sufficiently covered: but that would never occur when the sequence follows, as suggested in the paper; it would be perfectly good, if complete, under the rule of law.

DR. MEAD: I should like to ask if it adds strength to the declaration to have the defendant at the bedside when the declaration is taken.

MR. SUGHRUE: Not to the declaration; but it makes it not only a declaration, but another kind of evidence. It is very frequently the case that when the defendant is present, and a statement is made inculpating him, he makes some answer that is apart from the dying declaration; it then becomes subject to the ordinary rule of evidence, and competent to be used against him.

DR. MEAD: Is it advisable to have the defendant there?

MR. SUGHRUE: It would be a question of expediency rather than otherwise, having in mind the temperament of the person whose declaration was sought.

[1] See page 653 of the Journal.

Dr. Hough: I would like to ask if it is extremely unusual to find that a dying declaration is false?

Mr. Sughrue: I think that it is. More can be said in favor of it than of any kind of testimony. It is argued that here is a person who has every reason to tell the truth; who is beyond any expectation of any interest to serve him; who is, ordinarily, under religious injunction to tell the truth, and whose condition is the best safeguard of the truth itself; and I think that it is generally accepted by juries as the very best kind of evidence and as being much more infallible than any other.

Dr. Hough: I would like to mention a case that has come under my observation. An injured man, being informed by a physician that he was surely about to die, having received extreme unction, he being a Catholic, in the presence of the priest and the attending physician, and in the presence of the defendant, whom he identified, told an absolutely false story of the crime. The hearing in the district court found the defendant to be unimpeachable, and the testimony went to show that the homicide was in self-defence, and the defendant was not even brought before a grand jury, the evidence was so strong in his favor.

Dr. Buck: I would like to add another case — a case of abortion, where the victim fully expected death and received extreme unction, and her dying declaration was taken down. She did recover, however, but that declaration was false. The case was never brought before the court, yet, if it had been, if the victim had died, and there had been occasion, the declaration would have been found false.

I should also like to ask whether it is advisable to multiply the witnesses, whether it would be well to have more than the physician, or more than two witnesses, when a dying declaration is made.

Mr. Sughrue: I should say have no additional witnesses usually. If the statements are taken down in writing, it would be well to have any number of witnesses to testify to the fact that these were the statements made. If the statements were not written, if the declarations were oral, every witness would remember the facts somewhat differently from every other, either adding something to, or taking something from, the statement itself, and in that case it would not be advisable to have a number present. Two are quite enough, and in many cases two witnesses are one too many in an oral declaration. But if the statement is taken down in writing, then simply multiply the number present to give evidence to the fact that the statement was made.

Dr. Buck: Is it better to have the declaration written and signed?

Mr. Sughrue: It adds something to your testimony. You have then the material fact, something besides the recollection of the witnesses; you have the material fact in writing.

Dr. Buck: I should like to ask another question. Is it essential that a physician should receive this statement in order that he may testify as to the certainty of death in the mind of the person, or would a layman's opinion be sufficient?

Mr. Sughrue: That is purely a practical question. The testimony coming from a physician, if the physician had stated to the declarant his opinion as to death and received a response, would come more fittingly and more convincingly from him than from a layman. There would be no difference in the testimony except for that reason, that the declarant would be more apt to have that sort of a conversation with a medical man.

Dr. Perkins: I have a case now coming up which I expect to be thrown out through a failure in the dying declaration. The trouble with it is that when we come to look it over carefully in different parts of the statement, the declarant has apparently contradicated herself; it is not of much importance in itself, and only a small part of the declaration; but the fact that she contradicated herself was thought an important matter, and the court might properly throw the case out before it comes to grand jury.

Mr. Sughrue: I do not think that it would be thrown out. The fact that parts of the statement are contradictory would affect the story, but not the competence of the declarant.

Dr. Perkins: The contradiction was only a small part of the statement. The case was one where a man was arrested for killing his wife, and she said in her declaration that he threw an oil stove at her, and later she stated that as she stooped to pick it up he kicked it at her. This contradiction was not noticed at first, but appeared afterwards when it was read over, and we expected that the declaration would be thrown out.

Mr. Sughrue: Perhaps as important a thing as I can say in conclusion is this. It is, unfortunately, frequently the case that a physician will hear the story of the dying person, and get a full recital of the case, of the crime and of the criminal, and then will ask the person if he is conscious that he cannot recover, and if he says that he is conscious, and makes no further statement, but rests there, that declaration cannot be used. That is a condition with which prosecuting officers are confronted. Physicians should remember that it is extremely important that they should first obtain from the declarant the conviction on his part that there is no hope of recovery, and then obtain the recital; then there is no trouble when the evidence comes in, otherwise it is of no importance, and the testimony can never be used.

Dr. G. De N. Hough read a paper entitled

THE MARKS PRODUCED BY PISTOL SHOTS.[1]

Dr. Draper said that he deemed it very important in making experimental shots in preparation for a homicide trial that the same weapon should be used as was used in the homicide, and that ammunition of identical kind and calibre with those which the accused had employed should be taken. In cases where a defendant's liberty or life is at issue, the expert should avoid guessing as well as dogmatism in his opinions and the nearer a medical witness can come in his experiments to the same conditions as those of the crime the more trustworthy his conclusions will be. Observations like those reported by the reader have a distinct value, but they suffer an obvious loss in trustworthiness as data because an attempt is made to establish a standard by means of shots from revolvers chosen for the purpose without reference to those used in the crime itself. Better evidence would seem to be afforded by photographs of the bullet wound found upon the victim of the crime; such photographic representations tell their own story much more graphically than could be accomplished in any other way.

Dr. Hough: I want to state that the object of my

[1] See page 657 of the Journal.

investigation was to discover what, if anything, we could tell from the mark; if we have the weapon that was used, it simplifies the problem very much indeed. I think that if we have the weapon and know the ammunition that was used, we can say that the problem is practically no problem; and I stated in my paper that marks produced on different sorts of material are different in appearance, although the same in character, and I further stated that it was extremely advisable in experiments in any given case that the same material be used on which the mark has been made. I quite agree with Dr. Draper in what he says. I simply wish to call attention to the fact that I was aware of these objections he makes, and I thought that I brought that out strong in my paper, though not strong enough apparently. I would not for a moment go into court and testify as to the calibre and distance at which a weapon was fired, with nothing to guide me except these things, unless I made considerable reservation. But you can see from these papers how the difference in the mark is produced at a small difference in range, and I think that it is important, and that it shows us that we can tell very closely, if we take sufficient pains, the calibre and distance from which a weapon was fired by the mark found.

DR. MEAD: I think that the legal profession are fully aware of the importance of having the same powder and the same material in experimenting. In a case in which I was interested, the man being killed, Attorney-General Knowlton insisted that the experiments with the revolver be made on a leather jacket, same as the one worn by the dead man; not the same jacket, but another one similar, and they took this pains to get it. The police failed to get this leather jacket at one of the city stables, where it was thought that the men all wore leather jackets, for it was found that they were all using canvas. A man was then posted on the old Mill Dam Road, and stopped somewhere from twenty to thirty milkmen, until he found two leather jackets that were like the one the deceased had worn when he was shot, and he spent all night getting that jacket to bring it out to Watertown to me to make experiments in the morning. And that taught me a lesson of the importance of getting the same material, if these experiments are made; and I think it is one of the lessons to carry away from the reading — to experiment with the same powder and same weapon, and to make the experiment as near as possible on the same material as that of the homicidal act.

MR. SUGHRUE: This has all been very interesting to me. It seems to me that the prosecuting officer could, and would, receive very great assistance from such experiments as have been made here. The difficulty that has been suggested in reference to experiments upon the same coat or upon the same substance is ordinarily one that is not of great importance, because it is not competent to introduce evidence of experiments. The court will not permit you to make experiments in court, and the only use of such experiment as this is as illustrations. The expert comes in and states his opinion, and the importance of his opinion depends upon that upon which it is based, and the danger of such testimony is that if it is not accurate, if the expert can be attacked, if there is a wide range between the experiments, and if it is shown that it is not exact and that his testimony is based upon a foundation that is not very secure, it is very bad. But I can conceive that such experiments as have been made here would be of very great value in a trial for homicide by shooting or intent to murder; if it can be said, within given limits, that certain things mean certain other things, it is going to be of very great importance, and I can conceive that this would result from such experiments as Dr. Hough has made, and would be of very great importance in the trial of cases.

DR. PERKINS: In the case that I reported at the last meeting something came up in regard to the mark made by the shot which did not play any important part, but was of some interest. The woman shot at had on a blanket wrapper, and as I was not certain in regard to the distance at which the weapon was held, I made experiments. I obtained material the same as that worn in the blanket wrapper, by going to several of the wholesale houses; I also used the same revolver, although I could not get the same ammunition, and I found by the burns that the revolver had to be within twelve inches of the burned blanket wrapper. But another thing in regard to these burns which I found out was the care which should be taken in preserving the material burned. In that case I transferred the garment to the police, and as it was some distance to the station, the man took it to his home; when he got it again, he found that the servants had carefully washed it, and as a result the evidence of the burn had been destroyed. As this was an insanity case, it made no difference, but in another case it might be of great importance.

DR. HOUGH: I want to speak of a case where this was of some importance. The weapon and ammunition were unknown, and from the mark, I told the officers that it had probably been made with a .32-calibre, and the distance, as I figured it, had probably been not more than two inches. The man pleaded guilty when the case came into court. But the officers found the pistol which he might have used, and the ammunition which he might have used, and which they believed he did use, and it was found they corresponded with my suggestion.

Another point which I did not mention, because it did not amount to anything, was, I was in hopes that marks in cloth, for instance, that of a black coat, might be brought out by the x-ray photograph, but the cross light coming through carbon prevented satisfactory results.

DR. FRANK HOLYOKE reported

A CASE OF EXTRA-UTERINE PREGNANCY.[1]

THE MASSACHUSETTS MEDICAL SOCIETY. COUNCILLORS' MEETING.

THE annual meeting was held at Mechanics Building, Boston, on Tuesday, June 12, 1900.

The meeting was called to order at 5 P. M. by the President, Dr. Edwin B. Harvey. One hundred and twelve Councillors were present.

The Secretary read the names of 160 Fellows admitted since the last annual meeting, and of 29 whose deaths had been recorded.

It was voted, on recommendation of the Committee on Membership and Finance, that $3,500 of the sur-

[1] See page 655 of the Journal.

plus in the treasury be distributed among the district societies.

The Committee on Publications reported that Dr. William F. Whitney, of Boston, has been appointed to deliver the Shattuck Lecture at the annual meeting of the Society in 1901.

The Committee on Nominations reported, and the following were chosen officers of the Society for the ensuing year: President, Dr. Frank W. Draper, of Boston; Vice-President, Dr. William W. Eaton, of Danvers; Treasurer, Dr. Edward M. Buckingham, of Boston; Corresponding Secretary, Dr. Charles W. Swan, of Brookline; Recording Secretary, Dr. Francis W. Goss, of Roxbury; Librarian, Dr. Edwin H. Brigham, of Brookline. Dr. Charles F. Folsom, of Boston, was chosen orator of the annual meeting of the Society in 1901.

Voted, That the next annual meeting of the Society be held in Boston on the second Wednesday in June, 1901.

The following standing committees were appointed:

On Arrangements. — Drs. M. Storer, S. Crowell, W. H. Prescott, F. G. Balch, J. C. Hubbard, Farrar Cobb.

On Publications. — Drs. O. F. Wadsworth, G. B. Shattuck, H. L. Burrell.

On Membership and Finances — Drs. E. G. Cutler, L. R. Stone, F. W. Goss, W. Ela, C. M. Green.

To Procure Scientific Papers. — Drs. H. L. Burrell, A. K. Stone, F. H. Thompson, G. de N. Hough, H. W. Van Allen.

On Ethics and Discipline. — Drs. G. E. Francis, F. C. Shattuck, C. G. Carleton, E. Cowles, J. F. A. Adams.

On Medical Diplomas. — Drs. H. E. Marion, E. N. Whittier, O. F. Rogers.

On State and National Legislation. — Drs. F. W. Draper, H. P. Bowditch, S. D. Presbrey, S. W. Abbott, B. H. Hartwell.

ANNUAL DINNER.

The annual dinner of the Society was held at one o'clock, June 13th, Dr. Edwin B. Harvey, the President, presiding.

The literary exercises were opened by prayer by the Rev. Dr. E. L. Clark. In his introductory remarks the President spoke of the prosperity of the Society at large and the success of the meeting just terminated. After formally committing the conduct of the Society to the newly elected officers, he introduced as the first speaker Dr. W. H. Welch, of Johns Hopkins University.

Dr. Welch referred felicitously to his Shattuck Lecture, which had concerned itself with gas sepsis, and expressed the hope that his remarks might not be a psychical variety thereof. Speaking on the toast of the "Medical Profession," he felt that he had never before been in the presence of a body of men where such a theme should inspire better thoughts, that high medical ideals had always prevailed in Massachusetts and that it had offered more contributions to medical science than any other section of the country. The expectation which he had formed of standing in the presence of exceptionally intelligent men had been more than met, as he faced his audience. He felt that the medicine of to-day offers intellectual pleasures as never before; it now has all the attraction of a natural science, such as before belonged only to physics, geology and kindred subjects. The same intellectual pleasure is now to be had, whether study is conducted in the laboratory or at the bedside, and the term "scientific" is to be applied to the one no more than to the other. There is a growing solidarity of all workers in medicine, and the one aim of prevention and cure of disease is common to the laboratory workers and to those engaged in the practice of medicine. However seemingly remote the problems of the pathologist and bacteriologist may appear, the fact remains that all knowledge, however gained, must finally be of practical use, and the distinction at times made between the laboratory and the practical man is wholly false. Dr. Welch, in concluding his remarks, thanked the Society for the cordial reception accorded him, and brought the greetings of the Medical and Chirurgical Faculty of Maryland, which is one of the oldest State societies in the country. He felt that the bond of sympathy between the States of Massachusetts and Maryland was continually growing closer.

Dr. Harvey, introducing the next speaker, Attorney-General Hosea M. Knowlton, spoke of the age of the Massachusetts Medical Society and of its relations during the nearly one and a quarter centuries of its existence to the Commonwealth. Attorney-General Knowlton spoke at considerable length; he said in part: There is a definite relationship between the Commonwealth and the medical profession which it is my desire in part to elucidate. The medical profession is a company of artists, and by an artist I mean a man who knows how to do something useful to mankind better than the ordinary man. Physicians live to educate themselves and to benefit the world by their education. In general the government of the Commonwealth has in common with you a desire to protect its citizens from imposture, quackery and swindling. This is a ground of agreement. A difference is that the Commonwealth is not intolerant. It was founded on the principle of tolerance, that every man could do, say and think what he pleased. You have at times wanted to interfere with that doctrine; you may have attempted to regulate the practice of medicine by legislation. The Commonwealth cannot do that; it permits entire liberty of action to its citizens; it has not the right to prevent a man from employing any means of cure he may choose, but we have required that a man shall know something about this frame of ours before he calls himself "doctor." The less you undertake to regulate private conduct the better off you will be.

The time, however, is not far off when parents even should not be allowed to substitute humbug for medical science in the treatment of minors. In the second place, while any man may do as he pleases as concerns himself, no man has a right to communicate disease. Things are settled in the law; our work is finite; yours to a certain extent is infinite. Appreciate the fact that no one knows everything; that every sect has given you something. Let false dogmas expose themselves.

Mr. Knowlton concluded his remarks by a humorous allusion to Christian Science, which he had been reading and trying to understand, but without success. He felt that medicine as practised by its devoted students the world over was the true "Christian Science."

Dr. Harvey then introduced Mr. Henry L. Higginson, "whom if we have not met we all know."

Mr. Higginson eulogized the medical profession and saw great hope for the future in the broader education which it would be the function of the physician to inculcate among the people.

The Graduate Glee Club, under the leadership of Dr. Richard C. Cabot, rendered a number of admirable songs during the course of the dinner.

AMERICAN ORTHOPEDIC ASSOCIATION.

FOURTEENTH ANNUAL MEETING, HELD IN WASHINGTON, D. C., MAY 1, 2 AND 3, 1900, HARRY M. SHERMAN, M.D., OF SAN FRANCISCO, PRESIDENT.

(Concluded from No. 24, p. 631.)

SECOND DAY.

THE RECUMBENT KYPHOTONE, AND A SIMPLE DEVICE FOR APPLYING PLASTER JACKETS FOR THE CORRECTION OF THE DEFORMITY OF POTT'S DISEASE.

DR. R. TUNSTALL TAYLOR, of Baltimore, exhibited both of these devices.

FORCIBLE CORRECTION OF SPINAL CURVATURE FOLLOWED BY PARALYSIS.

DR. H. AUGUSTUS WILSON, of Philadelphia, reported this case. The kyphosis had been noted only a few weeks before coming under observation, and there was good reason for believing that it was of very recent development. Two attempts to reduce the deformity forcibly under profound anesthesia had resulted in an audible snap but in only slight improvement in the deformity. The operation had been followed by fever, lasting two weeks, and by sloughing of the soft parts. At the end of nine weeks the patient had been able to move around feebly, but had returned in forty days with an almost complete spastic paraplegia.

DR. A. M. PHELPS remarked that this case seemed to be a typical one of pressure myelitis from invasion of the cord, the forcible correction having nothing to do with the paralysis.

DR. RIDLON concurred in this opinion.

DR. R. W. LOVETT, commenting upon the brace presented by Dr. Dane, said that this apparatus was interesting in that it aimed to produce torsion. His own studies in lateral curvature had taught him that it was important to throw the weight backward on the articular processes, though not necessarily by producing lordosis. The problem was to determine in just what position of the spine the weight could be thus thrown on the articular processes to the best advantage.

DR. PHELPS said that it was only when the spine was bent backward considerably that any pressure is made on the articular processes, and that if there was any lateral deviation present, the application of an anteroposterior brace would aggravate this.

DR. LOVETT contended that this statement was erroneous, because experiment had shown that the articular processes come in contact at a point about fifteen degrees in front of the erect position.

A CASE OF SCORBUTIC SPINE.

DR. JOHN RIDLON, of Chicago, reported an interesting case of this kind in an infant of one year. The symptoms had developed so suddenly as to lead to the belief that the knee had been injured. The child was large and fat, with a rough and muddy skin. The spine was arched forward and rigid. The gums were dusky. Dr. Ridlon had ordered the child fed on unsterilized milk, raw meat and orange juice, and in two weeks the boy was well. In making the diagnosis one was called upon to differentiate scorbutus from rheumatism of the acute articular variety, infantile paralysis and rickets. In rickets the onset was gradual, and the spine was bent backward or laterally, and did not become stiff and painful without evidence of the disease.

DR. R. H. SAYRE said that he had put these children on a pillow with a shirt-board inside of it, and had then bandaged the child to the pillow. In addition, the diet had been appropriately regulated. All these scorbutic children that he had seen had been fed on sterilized milk or on some patent infant food.

DR. HOFFMAN spoke of a case of scorbutic spine that he had seen in a child of fourteen months. The kyphosis had been sharper than ordinarily seen in rickets. The infant had made a satisfactory recovery on a recumbency splint, being wet-nursed and fed with orange juice.

DR. HENRY LING TAYLOR, of New York, said that he had reported to this Association one of the earliest cases noted in this country. In these cases there was not true paralysis, but the limbs were kept quiet because motion caused extreme pain.

DR. STEWART L. MCCURDY, of Pittsburg, said that he had seen and reported several such cases. In none of them had there been bleeding from the gums. The absence of pain, fever and fretfulness enabled one to differentiate between scorbutus and rickets.

DR. R. H. SAYRE did not see how the paralysis in his case could be looked upon as only apparent, for when pins had been stuck into the feet, the child had made no effort to retract the part, and when the limbs had been lifted, they had fallen as though lifeless. He was inclined to believe that acute rickets was as good a term as scurvy.

DR. TAYLOR thought it unfortunate to confuse rickets and scurvy. Several cases had been recently reported in which there had been absolutely no rickets.

KNEE-JOINT SURGERY FOR OTHER THAN TUBERCULAR PROCESSES.

DR. JOEL E. GOLDTHWAIT, of Boston, read a paper with this title. The paper was based on a study of 27 patients and 33 operations. One of these operations had been for the removal of loose pieces of cartilage from the knee-joint in a woman of sixty-five. Another case was an irreducible dislocation of the patella of many years' duration. Eight of the operations had been because of the presence of loose cartilages. Apparently a relaxed condition of the joint had favored the crushing and tearing of the inner edge of the cartilage. The point usually contused was the inner thin edge. The best treatment was the removal of the cartilage, and this method had the advantage of extending only over a period of three weeks. There was danger of over-treatment. Where there were marked fringes, they should be removed, as they usually act as foreign bodies, excite frequent attacks of synovitis, and in course of time large coagula form in the joint.

Dr. W. R. Townsend cited as an instance of the importance of early exploratory incision a case in which two well-known surgeons had confirmed his diagnosis of tubercular disease of the knee, and yet exploratory incision had proved the true condition to be sarcoma.

Dr. Goldthwait said that the object of his paper was to remove the dread of many surgeons have of invading the knee-joint. He believed it was just as safe to enter the knee as the peritoneal cavity. In the cartilage cases he had made use of a straight incision, about one inch and a half long, inside of the patellar tendon. For exploration of the joint he made an incision, three inches long, on either side of the knee, and about one inch outside of the patella. He sutured the capsule separately when closing the wound.

THE TREATMENT OF VERTEBRAL TUBERCULOSIS WITH REFERENCE TO THE FORCIBLE CORRECTION OF THE DEFORMITY.

Dr. John Ridlon opened this discussion. In the past three years he had straightened two cases of rheumatoid stiffening of the spine, and had operated upon eight lateral curvatures under ether, and more than 35 cases of Pott's disease. In the worst cases that he had treated he had gained at first one and one-fourth inches in height, and at the second attempt, three-fourths of an inch. In all of the cases of lateral curvature almost all that had been gained had been subsequently lost; hence he no longer favored straightening such cases under ether. In a case of rhachitic curvature he had gained nothing by the method. He had operated upon both old and recent cases of Pott's disease, and those with and without abscess. There had been two fatalities. One of these, a case whose previous and personal history had not been sufficiently studied, died of tuberculosis two months after operation. The other fatal case was one having an abscess at the time of operation. The child had done well for six or eight months; then two or three abscesses had developed, and death had finally taken place as a result of the exhaustion consequent upon the prolonged suppuration. The operation seemed to him a reasonably safe one if done with proper care. In many cases he had used almost no pressure with his hands; in other cases the force had been very considerable, and exceptionally he had made use of as much force as he could exert with both hands. There had always been some crunching of the bones. In none had paralysis subsequently developed, while some, paraplegic at the time of the forcible correction, had improved as regards the paralysis. In the earlier cases he had hung his patients up by the heels; later he had tried supporting the head and pelvis, with the face down, while the plaster was applied. More recently he had made use of the Goldthwait frame, and had since then never included the head in the plaster. The shortest case had been four weeks in bed; the longest case had been in bed for about one year. His aim had been to keep them in bed for six or eight months, allowing them to lie on the face, back or side. In a few instances there had been no return of the deformity; about half a dozen had gone for a year without support or return of the deformity. In the majority of cases he had succeeded in keeping the deformity reduced to about half of what it had been before the operation.

Dr. Goldthwait said that in the past two years or more it had been a common practice at the Children's Hospital in Boston to apply an apparatus in the hyperextended position, for the most part without ether. He then exhibited a number of tracings that had been taken during the period in which the hyperextension treatment had been in use. They showed, in general, that the deformity had not increased, though in some instances there had been an increase in the compensatory curve. As a result of the work of the last two years he would hesitate to forcibly correct any spinal deformity resulting from tuberculosis unless it was associated with a paraplegia that had resisted other methods of treatment. He did not think the mortality had been materially increased by the use of forcible correction.

Dr. W. R. Townsend said that he had predicted that this treatment would ordinarily be followed by a recurrence of the deformity. There had been no deaths from forcible correction in the Hospital for Ruptured and Crippled. There the Goldthwait frame was employed without anesthesia.

Dr. De Forest Willard, of Philadelphia, said that this treatment had always seemed to him illogical and unsurgical, and consequently he had only made use of it in one case of total paralysis, which was at the time in a desperate state. The child had been able to walk about quite well at the end of six months. In a few selected old paraplegics this operation seemed to him justifiable.

Dr. R. H. Sayre said he believed many cases of severe lateral curvature could be benefited by great force applied under anesthesia.

Dr. T. Halsted Myers, of New York, said that his experience with forcible correction had been limited to four cases, but in all these it had been unfortunate.

Dr. Galloway said that while he had always regarded forcible correction as unscientific, he had held it in reserve for the first case of Pott's paraplegia incurable by other methods. Such a case had not yet presented itself.

Dr. McCurdy said he was accustomed to classify these cases into three groups, namely: (1) Old cases which require an anesthetic and considerable force for correction; (2) cases of paraplegia in which forcible correction may be beneficial, and (3) cases under active treatment in which there is a beginning kyphosis which gradual but forcible correction seems to improve.

Dr. Weigel thought the reports just presented indicated that the mechanical support used after the forcible correction had been inefficient.

Dr. R. Tunstall Taylor, of Baltimore, had not been favorably impressed with his trial of the method, and he was of the opinion that the older mechanical methods were safer and more accurate.

Dr. Hoffmann said that great stress had been laid upon the use of forcible correction in cases of Pott's paralysis, yet he had never seen a case of this kind that had not recovered if the spine had been rigidly immobilized and the patient kept on the back.

Dr. John L. Porter, of Chicago, said that from his observation of Dr. Ridlon's cases he felt positive that fully 50 per cent. of those straightened under anesthesia continued to show an improvement in the deformity.

Dr. Ridlon said that he would certainly try to

straighten every paraplegic case. Since seeing Dr. Goldthwait's tracings he had formed a better opinion of the value of the correction method with the aid of anesthesia.

DR. GOLDTHWAIT remarked that he had purposely not brought tracings of the cases treated under anesthesia because they were not better than those already exhibited. He was not in favor of using much traction or other force in securing correction.

THIRD DAY.

BRACE FOR LATERAL CURVATURE OF THE SPINE.

DR. GWILYM G. DAVIS, of Philadelphia, exhibited a new lateral curvature brace having a hip band and both anterior and posterior uprights. A shoulder piece encircles the high shoulder. From the posterior upright a band passes over the lump and underneath the arm of the affected side. The two points of support are on the arm above and the hip below.

DR. R. H. SAYRE was of the opinion that if the pressure were made on the large side, as it would be with this brace, the peak of the arch would become more arched.

DR. WEIGEL remarked that simply keeping the high shoulder down could have no special corrective influence on the deformity.

DR. DAVIS replied that he believed that the brace exerted a twisting force as well as a direct pressure.

RETARDATION OF GROWTH AS A CAUSE OF SHORTENING AFTER COXITIS.

DR. HENRY LING TAYLOR, of New York, read a paper on this subject. He said that measurements of some 30 cases of long-standing coxitis in children had shown that the tibia and foot of the affected side, as well as the femur, were considerably shorter than on the sound side. A comparison of a group of 10 cases of old unilateral poliomyelitis with a similar group of hip cases showed about the same amount of bone shortening. Retardation of growth was also found in the affections of childhood which disable one limb, and somewhat in proportion to the amount and duration of the disability and restraint imposed.

DEVELOPMENTAL SHORTENING IN TUBERCULAR BONE DISEASE.

DR. STEWART L. MCCURDY, of Pittsburg, presented in this paper several cases going to confirm some of the statements made in the paper just preceding.

DR. R. H. SAYRE said that in cases in which apparatus had been removed from one limb a considerable time before removal from the other he had noted the greater growth in the limb first liberated.

DR. GOLDTHWAIT said that by measurements and skiagraphs he had demonstrated in a series of hip-joint cases under treatment that the shortening took place below the knee.

DR. GIBNEY said that in tubercular disease of the knee the limb actually lengthens. Some of the dry cases which go on so well at first sometimes show after a few years a sudden and alarming degree of shortening.

DR. H. AUGUSTUS WILSON, of Philadelphia, said that according to Dr. Hurd's observations in China, after the use of the muscles of the feet in Chinese women had been partially restored there is evidence of increase in the diameter and length of the bones.

DR. PHELPS thought the shrinkage of the muscles was largely owing to a neurotic influence.

DR. NEWTON M. SHAFFER, of New York, said that where the nervous phenomena are most marked the shortening is apt to be proportionately great.

REPORT OF SOME STUDIES UPON THE ARTICULATIONS OF THE FOOT.

DR. JOHN DANE, of Boston, presented this report, illustrating, by means of anatomical specimens, the more common anomalies of articulation.

OBSERVATION ON CERTAIN PAINFUL AFFECTIONS OF THE FEET.

DR. LOUIS A. WEIGEL, of Rochester, made some remarks on this subject, illustrating them freely with skiagraphs.

INVESTIGATIONS AS TO THE TREATMENT OF FLAT-FOOT.

DR. E. H. BRADFORD, of Boston, sent a communication on this subject, but was unable to be present to read it.

A CASE OF CONGENITAL DISLOCATION OF THE WRIST.

DR. PHILIP HOFFMANN, of St. Louis, reported this case, and DR. GIBNEY then showed a second example of this dislocation, occurring in the person of one of the audience.

A CASE OF CONGENITAL DISLOCATION OF THE SHOULDER.

DR. JOHN L. PORTER, of Chicago, read the report of this case by invitation.

DR. PHELPS said that he had had eight cases of this dislocation, and had operated on four of them. In the latter he had invariably found fracture of the posterior border of the glenoid cavity. He now believed that the cause of the condition was always trauma.

DR. GIBNEY remarked that many of these cases were classified in the neurological clinics as examples of Erb's paralysis.

RAPID OSTEOCLASIS FOR THE CORRECTION OF RHACHITIC DEFORMITIES OF THE LEGS.

DR. WALLACE BLANCHARD, of Chicago, advocated in this paper a method of osteoclasis occupying not over eight seconds. The advantage claimed was that when operating so rapidly the circulation of the part was not impaired, and, as compared with supracondyloid osteotomy, the limb was increased in length instead of shortened. After the osteoclasis he exaggerates the correction of the curve. A long experience with the Grattan osteoclast in its original form had led him to think very highly of this instrument, which did not slip or cause splintering.

DR. T. HALSTED MYERS said that he had employed osteoclasis a good deal in the New York Foundling Hospital, and had found that if the pressure bar were applied on the inner side the bone could be fractured much more easily than if applied on the outer side.

AN OPERATION FOR UNUNITED INTRACAPSULAR FRACTURE OF THE HIP.

DR. GWILYM G. DAVIS, of Philadelphia, described in this paper a method of uniting the fracture by the insertion of ivory pins through an anterior incision after having freshened the edges of the fragments.

The following officers were elected: President, Dr.

Arthur J. Gillette, of St. Paul; First Vice-President, Dr. B. McKenzie, of Toronto; Second Vice-President, Dr. Louis A. Weigel, of Rochester; Treasurer, Dr. E. G. Brackett, of Boston; Secretary, Dr. John Ridlon, of Chicago.

The next annual meeting will be held at Niagara Falls, in May, 1901.

AMERICAN MEDICAL ASSOCIATION.

FIFTY-FIRST ANNUAL MEETING, HELD AT ATLANTIC CITY, N. J., JUNE 5–8, 1900.

SECTION ON SURGERY AND ANATOMY.

(Continued from No. 24, p. 637.)

THIRD DAY.

THE TREATMENT OF HERNIA IN CHILDREN,

by A. J. OCHSNER, of Chicago. He gave as predisposing factors of hernia the existence of the opening of the inguinal canal, weakness of the abdominal wall and hereditary tendency; the influence of a long mesentery is of doubtful importance. Among the exciting causes increased intra-abdominal pressure is of great importance; this may be partly due to indigestion and distention of the intestines with gas as a result of improper feeding; the digestive trouble often causes the child to cry, thus aggravating the condition; pressure may also be increased by straining at stool as a result of constipation, straining because of phimosis, and as a result of coughing. These conditions are much more common among the poor; the children are usually badly nourished, and their tissues abnormally lax and soft. In children, if the hernial sac is kept empty, and the abdominal pressure is removed, the majority are cured spontaneously. To keep the hernial sac empty, put the child in bed with the foot of the bed elevated. Remove digestive disturbances by careful attention to diet, and treat constipation, phimosis, coughing or other causes of intra-abdominal pressure. The child is thus relieved of its discomfort, is contented and sleeps most of the time. In this way the majority of cases of hernia can be cured. Operation is indicated if the hernia becomes strangulated, in case of irreducible hernia which becomes adherent to the sac, if the hernial opening is large and it cannot be retained with a truss, and if accompanied by hydrocele. The operation consists in dissecting out the sac, ligating it, and cutting it away, after which the stump is allowed to retract into the abdomen, and the opening is simply sutured.

TREATMENT OF VENTRAL HERNIA.

DR. M. M. JOHNSON, of Hartford, Conn., believes that ventral hernia occurs in nearly 10 per cent. of cases after abdominal operations. Factors influential in its causation are drainage and granulating wounds, stitch abscesses, division of the motor nerves, lowered vitality and hereditary diseases. Dr. Johnson described his method of operating, in which he uses buried kangaroo-tendon sutures with quilled stay sutures of silver wire. He reported two bad cases in which he had operated successfully.

CURE OF INGUINAL HERNIA IN THE MALE.

DR. H. O. MARCY, of Boston, said it is scarcely ten years since the radical cure for hernia has become a recognized operation. The various methods of operating need not be considered in detail, but only the essential points of any successful operation. In most hernias except the inguinal variety there is a simple opening, and its closure will give rise to cure of the hernia. The essential point of difference in inguinal hernia is produced by the passage of the cord through the inguinal canal. Under normal conditions Marcy does not believe that a funnel-shaped process of the peritoneum such as is described by many writers exists. Sufficient attention has not been called to the importance of closure of the internal ring in the cure of hernia. Operations in which the cord is passed directly through the abdominal wall and transplanted under the skin are not followed by the best results, as the obliquity of the inguinal canal is a natural protection against protrusion of the abdominal contents. Among the essentials of successful operation were mentioned free, careful dissection, proper disposition of the hernial contents, careful attention to asepsis, the use of buried animal sutures, closure of the wound without drainage, and sealing the wound without further dressing.

DR. W. B. DEGARMO, of New York, considers some defect of the abdominal wall the most important predisposing cause of hernia, while constipation is considered the most important exciting cause. He hesitates to operate upon children under five years old, for he believes that 95 per cent. of them can be cured by the use of a truss. He does not endorse the plan of treatment by putting the child in bed, for this prevents its development. The method of operating first described by Marcy and now generally known as Bassini's method he considers the best.

DR. FERGUSON, of Chicago, considers deficiency of the internal oblique muscle at Poupart's ligament the most important etiological factor in inguinal hernia. The honor of proposing the method for the cure of inguinal hernia belongs to Marcy.

DR. MAYO, of Rochester, Minn., believes that the majority of hernias occurring in children can be cured by the method suggested by Ochsner. The most important factor which tends to give permanent cure in operations by Bassini's method is the fact that the scar tissue is divided into two lines, the first line protected by Poupart's ligament, the second by the thick abdominal muscles. Scar tissue is always weak and this division is consequently of great value.

DR. OCHSNER said that Dr. DeGarmo's objection to his method of treatment in bed does not hold, as it is continued only six weeks.

DR. MARCY said that ventral hernia may usually be avoided. He has not had a single hernia in non-suppurative cases after over 1,000 abdominal operations.

DR. W. L. WILLS, of Los Angeles, Cal., read a paper on

EXTERNAL DRAINAGE OF SUPERFICIAL LUNG CAVITIES, WITH REPORT OF TWO SUCCESSFUL CASES.

It is difficult to explain why suppurating tuberculous cavities of the lung are allowed to go on to infect the other lung and to produce pyemic conditions, when surgeons would feel justified in operating for such suppuration in any other part of the body. Wills advocates external drainage in such cases, but finds it difficult to get the consent of patients to the operation. He reported the case of a man of forty-five,

who had been losing strength and weight and who had all signs of a tuberculous cavity of the lower part of the left lung. Tubercle bacilli and elastic fibres had been found in the sputum. Under medical treatment he improved, and refused operation, but returned and consented to operation after his condition became much worse, three months later. An incision was made in the anterior axillary line and the seventh rib was resected; no pus was found in the pleural cavity, but a drainage tube was inserted. A gush of pus came, nine days later, simultaneously from the trachea and the wound. After this the temperature fell to normal, and there was free, foul discharge. The patient left the hospital with several discharging sinuses, and when seen about a year later, his sinuses had closed, he had gained seventy-five pounds in weight and was working hard. Special attention was called to the fact that strong solutions of mercuric chloride were used for irrigation without poisonous effect, and these were thought to have had something to do with the cure. [Wills has evidently lost sight of the fact that absorption does not take place from granulating surfaces, such as the walls of abscess cavities.] A second operation was reported, which was performed by a colleague of the speaker. A slight-built, emaciated man with signs of tuberculous cavity was subjected to resection of the rib, and three days later free discharge appeared and the temperature fell to normal. After eight days the patient left for home much improved in health. Both patients took the anesthetic very poorly.

DR. MURPHY, of Chicago: If no adhesions of the pleura to the chest wall are present there is danger in opening the thorax. Puncture with a needle, admitting air, is not dangerous, and the air will produce compression of the lung and evacuation of the abscess cavity through the bronchi. If adhesions exist the lung should be directly incised instead of being opened with cautery.

DR. WILLS, in closing, mentioned the advantages of California climate for such patients, and the importance of getting them out into the air soon after operation.

SURGICAL ERRORS OF SKIAGRAPHY.

DR CARL BECK, of New York, reported a case of fracture of the tibia, showing the necessity of two or more skiagraphs in the diagnosis of fractures. In this case of oblique fracture it was impossible to see any break by a skiagraph taken in the frontal plane, but it was clearly seen in one taken from one side. Unless the normal epiphyses are understood they may be taken for fracture, as may also the os intermedium pedis. Several skiagraphs were exhibited.

DIAGNOSIS OF CALCULOUS DISEASE OF KIDNEY, URETERS AND BLADDER BY THE X-RAYS.

DR. C. L. LEONARD, of Philadelphia, read this paper. If skilfully used the diagnosis by the x-rays is absolutely accurate. He reports 20 cases in which the diagnosis of calculus was confirmed by operation, necropsy, or passage of the stone. Not only is positive diagnosis possible but a negative diagnosis may be made, thus avoiding unnecessary operation. The x ray diagnosis is preferable to exploratory operation. Errors are only possible from faulty technic or lack of skill in reading the negatives.

TREATMENT OF INJURIES OF THE URETER.

DR. B. B. DAVIS, of Omaha, Neb., described a method of ureteral anastomosis which he employed in uniting the ureter in a case in which it was divided while removing an intraligamentous cyst. The lower end of the duct was split for about one centimetre, threaded needles were passed through the walls of the upper end, then through the lower end, and on drawing on the sutures the upper end was drawn down and invaginated into the lower end. Later examinations proved that the ureter remained patulous. This method is quicker, simpler and sacrifices less tissue than that of Van Hook.

DR. KELLY, of Baltimore, commended Leonard's work with the x-rays; in several cases in which he had been unable to locate ureteral stone with wax-tipped bougies, a diagnosis was made by Leonard with the x-rays. He briefly described his method of end-to-end anastomosis of the ureter with a guide, and reported a case in which he freed the bladder from its attachments and sutured it to the psoas muscle in order to get it high enough to anastomose with a short ureter.

DR. BEVAN, of Chicago, mentioned a case in which two stones in the pelvis of the kidney and one in the kidney substance were located by the x-rays. The third stone was found only after some needling, and would not have been discovered had it not been previously located by the x-rays. He considers the x-rays a most valuable means of diagnosis.

DR. BOVÉE, of Washington, D. C., considers anastomosis usually the best method of dealing with a severed ureter. Implantation into the bowel is the next best procedure. Over eighty operations of this kind have been reported with a large number of successes. He believes that the dangers of ureteral anastomosis have been overestimated; the function of the ureter is usually completely restored. Out of 21 cases thus far reported an unfavorable result followed in but one case.

DR. GOODHUE, of Dayton, O., reports a case of ureteral anastomosis by Van Hook's method.

DR. WINSLOW, of Baltimore, reported having operated on a case several years ago, by a method similar to that described by Davis.

DR. BECK, in closing, expressed his belief that the importance of a negative x-ray diagnosis is not sufficiently appreciated. To make such a diagnosis three or four skiagraphs are necessary.

DR. MCARTHUR, of Chicago, called attention to the different intensity of shadows produced by calculi of various chemical compositions.

DR. SUMMERS, of Omaha, Neb, mentioned a case in which he found double ureter present at the time of operation.

DR. CARPENTER, of San Francisco, in removing an intraligamentous cyst cut out a section about two inches long from the ureter; he performed implantation into the bladder and showed a button, devised on the plan of Murphy's button, which had been devised for such operations.

DR. LEONARD, in closing, emphasized the importance of using a low vacuum tube in diagnosing renal calculi by means of the x-rays, and the necessity for skilful technique.

DR. DAVIS, in closing, called attention to the fact that the ureter is apt to be divided in severe, long

operations and hence the necessity for a rapid method of repair such as he had described; the operation could be performed in five minutes.

Dr. Morgan Vance, of Louisville, Ky., read a paper entitled

EXSTROPHY OF THE BLADDER, WITH EXHIBITION OF A CASE.

A boy of seventeen came under observation for exstrophy of the bladder and hypospadias with all the disagreeable consequences. Operation was performed by sliding triangular flaps from the iliac region without inverting the skin, and after seven operations at different times extending over a period of two years a successful result was obtained. The patient was present for examination.

Dr. De Forest Willard, of Philadelphia, considered the result in this case one of the most admirable he had ever seen. In most cases success is not obtained even after repeated operations. If the skin is turned in, concretions form and give rise to pain and discomfort, sometimes making it necessary to reopen the bladder. He believes that the most satisfactory treatment in these cases is to transplant the ureters into the colon above the sigmoid flexure, thus preventing incontinence of urine. It is best to remove a section of bladder wall with the ends of the ureters, for in this way the best possible valve is obtained.

Dr. Kelly, of Baltimore, agreed with Willard that transplanting the ureters into the bowel was the most successful operation. In one case he loosened the sacro-iliac joint as had been done by Trendelenburg to aid in approximation. Vance's operation had the advantage of giving a functioning penis.

Dr. Means, of Columbus, has a case similar to Vance's under treatment.

Dr. Herzel, of Chicago, has been favorably impressed with the operation of anastomosing the intestine and bladder in such cases.

Dr. Eastman, of Indianapolis, Ind., mentioned a case in which he did nephrectomy on one side and sutured the ureter into the groove of a hypospadiac penis on the other for the relief of exstrophy. The patient is still in excellent health.

Dr. Summers, of Omaha, Neb., mentioned a case occurring in a female in which he performed anastomosis between bladder and vagina, thus obtaining a narrower opening from which to collect the urine.

Dr. Vance, in closing, expressed his belief that the case presented was as bad as any case could be and that a similar result could be obtained in any case by perseverance and boldness in dragging on the tissues.

SURGICAL ASEPSIS OF THE URETHRA AND BLADDER.

Dr. Ferd C. Valentine, of New York, read this paper. Attention was called to the difficulties of obtaining anything like a sterile condition of the urinary tract; urinary diluents, antiseptic drugs taken internally and injections with the piston-syringe are evanescent in their effects and give only an approach to asepsis. Valentine demonstrated an apparatus which he devised seven years ago for copious flushing of the urethra. During that time he has invariably practised such irrigation before and after all instrumentation of the urethra and he has not had a single case of urethral fever. He advises auto-irrigation by the use of the apparatus also in cases of gonorrhea in which the patient cannot visit the physician regularly and for those obliged to use the catheter themselves for enlarged prostate, etc.

THE TREATMENT OF PROSTATIC HYPERTROPHY.

Dr. Parker Syms, of New York, described the pathologic conditions found in these cases and the well-known series of symptoms produced. For the operative relief of this condition, Bottini's operation and prostatectomy are the only procedures which merit discussion. The former operation he has not performed, but he thinks favorably of it: the latter operation he considers one of the greatest achievements of modern surgery. The death-rate has been high, not because of the dangers of operation, but because operation was left as a last resort and undertaken when the patient was unfit for any operation. Operation, to be successful, should be undertaken before the appearance of pain, infection and cystitis. It should not be undertaken on men with atheromatous arteries, unfit for any operation. He advises the perineal operation without suprapubic incision, and he showed a bulb which he has devised which can be introduced into the bladder in a collapsed condition and then filled with air to force the prostate down, so that it is readily accessible for operation.

Dr. C. C. Thayer, of Clifton Springs, N. Y., commended Valentine's apparatus, but believed a fountain-syringe might be substituted for it. Local applications offer the best hope in the treatment of urethral affections.

Dr. Glenn, of Alabama, believes that Valentine is over-enthusiastic in using irrigation, and that it is unnecessary except when there is urethral discharge.

Dr. Young, of Baltimore, has performed the Bottini operation successfully in several cases and considers it a very valuable method.

Dr. Chismore, of San Francisco: The method of complete enucleation of the prostate commends itself to him as a great advance in the treatment of prostatic hypertrophy.

Dr. Beck, of New York, agrees with Valentine that irrigation is advisable in all cases of instrumentation of the urethra.

Dr. Robbins, of Detroit, considers urotropin the only internal urinary antiseptic of any value, and considers copious irrigation a valuable procedure.

Dr. Eastman, of Indianapolis, credits Valentine with the introduction of Janet's irrigation method in America. He believes that a large piston-syringe is more easily sterilized, more convenient, and in skilful hands may be more accurately used than the fountain-syringe.

Dr. Bullitt, of Louisville, Ky., considers Valentine's apparatus unnecessarily complicated; the shield is an advantage. It is impossible to gauge pressure by the piston-syringe and it is not easily sterilized.

Dr. Gray, of Jersey City, thinks more favorably of prostatectomy than of Bottini's operation.

Dr. Guiteras, of New York, believes that irrigating the urethra and bladder always improves their condition. Auto-irrigation should not be advised if there is any obstruction, and irrigation should always be discontinued as soon as there is any discomfort felt. An enlarged prostate should not be enucleated if there is pyelonephritis or arterial disease. The Bottini operation is suited to cases in which there is not great enlargement and in which the obstruction is mainly caused by the middle lobe. The mortality has been

placed too high by some writers; in the hands of skilled operators it should not be over five per cent., while the mortality of enucleation is never less than 20 per cent.

(To be continued.)

SECTION ON THE PRACTICE OF MEDICINE.

(Continued from No. 24, p. 641.)

DR. A. E. WOLDERT, of Philadelphia, read a paper entitled

INOCULATION OF MALARIAL FEVER THROUGH THE AGENCY OF THE MOSQUITO, WITH SOME SECTIONS AND DISSECTIONS OF THE MOSQUITO. ETIOLOGY OF MALARIAL FEVER AND SOME OBSERVATIONS MADE IN THE SOUTH SEVERAL YEARS AGO.

The paper dealt with the varieties and the anatomy of mosquitoes. Among the agents for destroying mosquito larvæ it was found that a solution of tobacco in kerosene oil was the most efficient.

A paper by DR. CHARLES F. CRAIG, of the United States Army, entitled

SOME TYPICAL CASES OF ESTIVO-AUTUMNAL AND TERTIAN MALARIAL FEVERS, WITH A STUDY OF THE PARASITES OBSERVED IN THE BLOOD,

was read by the Secretary of the Section, DR. FUTCHER. The paper described the symptoms, temperature curves, and course of cases of quotidian and of tertian estivo-autumnal malaria. Small doses of quinine will cause the temperature curve and the symptoms to become so changed that the disease cannot be recognized as malaria. The infection by two forms of parasite will also produce abnormal temperature curves. The paper described the differences in the microscopic appearances of the two forms of parasite.

A paper by DR. GOLTMAN, of Memphis, Tenn.,

EXPERIENCES WITH SOME OF THE PERNICIOUS FORMS OF MALARIA,

was read by title.

DR. FRANK A. JONES, of Memphis, Tenn., read a paper entitled

CLINICAL OBSERVATIONS IN MALARIA.

In the Mississippi swamps the doctor frequently sees cases of malaria that are chronic from the start. When the patient who has this form of malaria goes to a non-malarial district chills will develop in from twenty-four to forty-eight hours. A patient coming from a non-malarial into a malarial district often puts on fat and suffers from boils in winter, which the author thinks is due to the malarial poison. In the swampy regions pneumonia is common and the attacks are irregular and fatal. Cases of pernicious malaria are common. The negro seems to be immune to malarial paroxysms. Hemoglobinuria is the end product of neglected malaria; it is more frequent after the occurrence of the first frost, and at that season of the year it is more fatal than at other seasons. In cases of hemoglobinuria paresis of the bowels is common. Quinine is dangerous in such attacks. The author believes that attacks of true splenic leukemia are due to malaria.

DR. WM. BRITT BURNS, of Deckerville, Ark., read a paper entitled

MALARIAL HEMOGLOBINURIA.

The author has found estivo-autumnal parasites in the blood in all cases of malarial hemoglobinuria that he has seen, 16 in number. He is an advocate of the use of quinine in the disease. He has seen it in full-blooded negroes.

In the discussion that followed the reading of these papers, DR. WILLIAM KRAUSS, of Memphis, Tenn., said that in his opinion hemoglobinuria following malaria is a syndrome if not a distinct disease, and that it is not a mere symptom. The condition is not a toxic one. There must be some substance in the blood that allows quinine to produce the condition, since that drug sometimes will, and again will fail to, produce it. The attack of hemoglobinuria usually kills the parasites in the blood, which accounts for the fact that they are seldom found. There has never been a malarial toxin described. The determining factors in the production of the condition are: (1) Neglect of an old malaria; (2) the superposition of a new attack of the disease; (3) some indiscretion; (4) constipation and hepatic stasis; and (5) change to a non-malarial climate. The speaker had never found the parasite in the tissues of a patient dead of the disease.

DR. THAYER, of Baltimore, said that Romanowsky's stain is an important advance in clinical hematology. He has not been able to find a quotidian estivo-autumnal parasite. Nephritis and pneumonia are common in malarial negro patients. In some cases of malarial hemoglobinuria quinine does harm, while in other cases it does good. A rule is suggested for the administration of the drug; when the parasite is found active in the blood of the sick patient, give quinine; when the plasmodium is not found, do not give it.

DR. WESLEY, of Chicago, said that he had seen chronic malaria in the negro soldiers who had returned from Santiago.

DR. DAVIS, of Chicago, asked whether the anopheles migrated. If this insect does not migrate, how can the disappearance of the disease and its reappearance in a given locality be accounted for?

In answer to this question DR. HOWARD said that there was no evidence that the anopheles migrated by itself, but that it was frequently carried from place to place in public conveyances. Finding a suitable place for breeding in a new locality it would then become a resident. The anopheles has been found from 1,500 to 2,000 feet above the level of the sea.

DR. ROBERT B. PREBLE, of Chicago, read a paper entitled

PROLONGED FEVERS OF OBSCURE ORIGIN.

The author is of the opinion that many continued fevers are manifestations of sepsis and that they may be due to the pus cocci, the pneumococcus, the gonococcus, or the bacillus pyocyaneus. The cases may be either systemic or focal. They may be classed as cardiac, pulmonary, gastro-intestinal, hepatic, renal, osteo-arthritic, hematolytic and nervous. The author then gave a description of the symptoms of the various forms of the cases as classified above. Such cases were formerly diagnosed typhoid fever or typho-malaria. The differential diagnosis is best made by blood examination. He believes that the cases of so-called malignant endocarditis may be a manifestation of sepsis. Many of the joint diseases that are now

diagnosed as rheumatic and the condition known as peliosis rheumatica are probably also septic manifestations. The treatment should be symptomatic and supporting.

Dr. Roberts, of Syracuse, asked whether the reader would exclude typhoid fever if the Widal and the diazo reactions were absent?

Dr. Bishop, of New York City, said that he was of the opinion that some of these obscure cases might be atypical cases of typhoid fever. If they were it would be possible to determine definitely by resort to serum diagnosis.

Dr. Davis, of Chicago, advised those that had to do with all forms of febrile disease to watch for endocarditis, especially in these atypical septic conditions. Many cases of malignant endocarditis have not been such from the start, but are instances of endocarditis engrafted upon some septic disease.

Dr. Preble said that he would not make a diagnosis on the presence or absence of the Widal reaction alone. A large number of these cases recover. He would not exclude the terms rheumatism, purpura, etc., from the nomenclature, but would instruct students that these conditions are probably not entities but symptoms of septic conditions.

Dr. Krauss, of Memphis, Tenn., and Dr. Favill, of Chicago, also took part in the discussion.

PATHOLOGY OF RHEUMATISM.

Dr. David Riesman, of Philadelphia, says that the facts pointing to the infectious origin of the disease are: (1) The fever; (2) the chill; (3) the occasional epidemic outbreaks; (4) the seasonal and climatic influence; (5) the character of the complications, which are those of the infectious diseases; (6) a demonstrable portal of entry for the virus in many cases, such as the tonsils, otitis media, operation in the nose, felon, furuncles, fistula in ano and vaccination; (7) the occurrence of acute endocarditis; and (8) the direct transmission of the disease from the mother to the fetus. Bacteriologic examinations seem to lead to the conclusion that acute polyarthritis is an entity caused by a single agent as yet to be discovered. The anaërobic bacillus of Achalme seems to be the most promising of the organisms yet isolated from the diseased tissues. The joint changes found in the patients dead of acute articular rheumatism resemble those seen in other acute infectious processes. The early changes in the heart valves, according to the investigations of Achalme, are swelling and edema with the occurrence of mast cells in the tissue of the valve.

RHEUMATISM AND THE PREVENTION OF HEART COMPLICATIONS.

Dr. James J. Walsh, of New York City, thinks rheumatism includes a series of closely allied processes. It is possible that the acid reaction of the blood is a protective process on the part of nature. The disease is one of low mortality. The use of the salicylates has reduced the severity of the symptoms, but does not seem to lessen the frequence of the occurrence of heart complications. The salicylates are not specifics, and the German school holds that antipyrin lessens the frequence of the heart complications. Rest is the most important element both in the prevention and in the treatment of the cardiac complications. Potassium iodide has some influence for good on the valvular lesions in their incipiency. Endocarditis is one of the essential elements of the condition, not a true complication.

THE RELATIONS OF CHOREA AND RHEUMATISM.

Dr. Charles W. Burr, of Philadelphia, read this paper. There is frequently a history of rheumatism in cases of chorea. More frequently there is a history of joint or of general pain. Rarely chorea occurs during an attack of acute rheumatism. Children who have had chorea are more apt, in adult life, to have acute rheumatic fever than those that have not had chorea. At autopsy in subjects dead of chorea the one lesion that is invariably found is valvulitis. Rheumatic angina frequently precedes chorea. The coincidence of the diseases is not so frequent as to justify saying that chorea is a rheumatic disease. Rheumatic affections may possibly predispose to chorea.

HEART IN RHEUMATISM.

Dr. DeLancy Rochester, of Buffalo, thinks rheumatism is undoubtedly an acute infectious process. Endocarditis is seen in 60 per cent. and pericarditis in 10 per cent. of all cases. Myocarditis occurs in all cases of pericarditis, often in cases of endocarditis, and is sometimes found to exist alone. In myocarditis complicating rheumatic affections the papillary muscles are the first structures to become involved. The soft systolic murmur heard at the apex and over the body of the ventricle and not transmitted very far toward the axilla is probably due to the involvement of the muscular papillares. The occurrence of endocarditis or of pericarditis is no contraindication to the salicylic-acid treatment.

PATHOGENESIS AND CLINICAL FEATURES OF ARTHRITIS DEFORMANS.

Dr. A. O. J. Kelly, of Philadelphia, said the disease presents joint, muscle and constitutional lesions. The nervous and the bacterial theories are the most important and reasonable yet advanced to account for the symptoms, but neither entirely covers the case, although it is probable there is a germ of truth in each. Arthritis deformans is an infectious trophoneurosis. The bacteria, which probably possess a selective tendency to affect certain joints, become lodged there, producing local lesions and elaborating toxins that are taken up by the blood and produce the other symptoms of the disease. The acute cases of the disease are decidedly infectious in type clinically.

Dr. F. A. Packard, of Philadelphia, said that rheumatism now covers many diagnostic sins, just as dropsy did at one time. Rheumatism is not a local disease. Arthritis, endocarditis, etc., are not rheumatism. Acute articular rheumatism is a well-defined series of signs and symptoms produced by an unknown etiologic factor, with a great tendency to attack the serous membranes, notably the endocardium. Arthritic diseases may be classified as (1) acute articular rheumatism; (2) acute infectious arthritis, seen in gonorrhea and in scarlet fever; (3) chronic infective arthritis, seen in children; (4) rheumatoid arthritis; (5) the spinal arthropathies, and (6) the arthritis of gout. The endocarditis that presents growing pains in the history should not be called rheumatic endocarditis. The term rheumatic pleurisy is a mistake, since the condition is not always rheumatic. Rheumatism is not a nervous disease. The lactic-acid theory is not

tenable. Articular rheumatism is an infectious process that may be caused by one of various micro-organisms entering the system, often from the throat.

DR. JOHN H. MUSSER, of Philadelphia, said that acute articular rheumatism is undoubtedly an infectious process. Many joint cases are of toxic origin. In many cases skin lesions, which may be of gastro-intestinal toxic origin, are associated with joint lesions.

DR. J. M. ANDERS, of Philadelphia, said acute articular rheumatism is not an arthritic disease; it is unquestionably infectious. The cardiac complications are always infectious and will be found to be due to a toxin. Chorea and rheumatism are not etiologically related. The endocarditis of chorea is not necessarily rheumatic endocarditis. It is going too far to think that all murmurs in chorea are organic; they may be functional. If in the course of chorea a murmur develops accompanied by fever, he would say that that murmur was organic. Rheumatism is a febrile disease. Cases of secondary acute articular rheumatism are rare, and if such cases do occur, the primary affection should be carefully noted. The differentiation of acute articular rheumatism and osteomyelitis is important. To prevent the cardiac complications, he combines the salicylic acid and the alkaline treatments.

CHARLES G. STOCKTON, of Buffalo, considered acute articular rheumatism to be an infection. The infectious neurotrophic theory of arthritis deformans is very reasonable. There are undoubtedly inherent conditions in certain individuals that invite the localization of the disease process.

DR. L. F. BISHOP, of New York City, believes that there is a disorder of the chemistry of the body, a disorder of the processes of nutrition, as well as an infectious aspect in the development of joint diseases. We obtain better results by classifying these diseases according to this system: (1) Infectious arthritis, as acute articular rheumatism; (2) arthritis due to chemic changes, as gouty; and (3) arthritis due to nutritional changes, as arthritis deformans. These three classes of changes may exist in the body coincidently. Chorea has been too definitely defined; chorea major is a different disease from Sydenham's chorea. Very few of the murmurs of the cases of chorea that he has seen are organic. Chorea may be complicated by infectious processes and it is these cases with the infectious element that develop cardiac lesions.

DR. H. B. FAVILL, of Chicago, said acute articular rheumatism has both a toxic and an infectious side. The confusion of classification is due to the endeavor to group different conditions under one head.

DR. BIRNIE, of Maryland, said that, in his experience, no drug had any influence on the course of acute articular rheumatism. Rest in bed, hygiene and nursing are the best methods for the prevention of cardiac complications. Potassium iodide and iron are useful.

DR. MCCASKEY, of Fort Wayne, Ind., considered rheumatoid arthritis to be a toxemia of unknown origin, possibly from the gastro-intestinal tract. He has used potassium iodide by cataphoresis with satisfactory symptomatic results. It may be more proper to use some antiseptic solution by cataphoresis.

DR. S. SOLIS-COHEN, of Philadelphia, said acute cases of rheumatoid arthritis affect the large joints, while the chronic cases affect the small ones. In the latter group of cases the joints may be spindle-shaped, or they may present lateral deformity. The infectious element is more probable in the acute than in the chronic forms. The definition advanced by Dr. Kelly would better be that the disease is a toxic trophoneurosis. The tincture of ferric chloride in arthritic cases may be combined with salicylic-acid preparations, and seems to prevent heart complications. Alkaline treatment is also valuable.

DR. DAVID REISMAN said that he had used extension in rheumatoid arthritis to prevent the occurrence of deformity in the large joints. In acute articular heumatism he uses a combination of salicylates and alkalies; gives a milk diet with lemonade, and has the patient sleep between blankets.

DR. J. J. WALSH said that if the bacillus of rheumatism should be found to be aërobic, after passing through the lungs it would be more virulent, and thus the frequency of left-sided heart disease in the condition might be explained. He believes that in complicated cases the following is the course of events, — rheumatism first, then chorea from a lessened blood supply to the brain, then rheumatism again.

DR. ROCHESTER said that the patient should be kept in bed for from six to eight weeks in every case. The bowels should be kept freely open by the use of rochelle salt. Large doses of sodium salicylate, frequently repeated, should be employed; 30 grains every three hours for three days has failed, in his hands, to produce a deleterious influence on the heart. Iron is of great importance in the treatment of the accompanying anemia. He advises the use of 30 minims of the tincture of ferric chloride or 15 grains of the pyrophosphate. He believes that no treatment by drugs will prevent the occurrence of cardiac complications. Strychnine is of great value.

DR. KELLY referred to the use of superheated dry air during a long period of time as being beneficial in cases of rheumatoid arthritis. He thinks strontium salicylate better than sodium salicylate because it is less likely to upset the stomach. Pure salicylic acid is also a convenient and satisfactory form in which to administer the remedy.

A CASE OF MALIGNANT ENDOCARDITIS WITH RECOVERY.

DR. N. S. DAVIS, JR., of Chicago, read this paper. The patient was a locomotive fireman, age twenty-five. The condition was at first diagnosed gastro-enteritis, then typhoid fever, and later malignant endocarditis. The latter diagnosis was made on account of the persistent cardiac murmur, the absence of the plasmodium malariæ, the absence of the Widal reaction, the septic type of the fever with chills and sweats. The chronic gastritis may have been the portal of entrance for the infection. The diazo reaction was present. The author cited recorded cases of recovery from the disease.

(To be continued).

APPOINTMENTS AT THE UNIVERSITY OF PENNSYLVANIA. — The following appointments have recently been made: Dr J. William White, Rhea Barton Professor of Surgery; Drs. Edward Martin and C. H Frazier, clinical professors of surgery; Dr. R. M. Pearce, of Boston, demonstrator of pathology; Drs. W. F. Hendrickson and F. H. Howard, assistant demonstrators of pathology.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, JUNE 21, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.

THREE NOTABLE VOLUMES.

MEDICAL teaching in America up to within a few years has occupied relatively so subordinate a place as compared with medical practice that few men of eminence are remembered because they have been primarily great teachers. It is one of the best possible signs of the times that a change in this respect is everywhere observable. We are coming to see that the teaching of medicine is as worthy a profession as teaching Latin or Greek or science in any of its special departments. The result of this changed attitude is that the medical teacher as an individual is coming more and more into prominence, because he is a teacher and not because he is successful merely on the practical side of his profession. Teaching in medicine, as in everything else, must be an end in itself, and not merely a means, if the dignity of medical instruction is to be maintained and enlarged. In certain sections of the country, at least, this fact is being clearly recognized, with the natural result that medical education is rapidly progressing toward that position of respect to which it should long ago have been elevated.

Germany, on the contrary, is a country where the teacher in medicine, as in other branches of learning, has for many years been accorded the greatest measure of respect. This has led to the public recognition of his services on the part of his students and colleagues in the so-called "jubilees," functions of much solemnity as well as hilarity. That this particular form of recognition could ever be transferred from German to American soil is doubtful, and even were it possible it is extremely questionable whether it would be desirable. The spirit, however, which animates such gatherings up to a pitch often of extreme enthusiasm, as in the "Fest Kommers" given Helmholtz and Virchow some years ago, is quite possible of reproduction here. If we have the men capable of calling out the enthusiasm of their colleagues, the particular form which that enthusiasm takes is a matter of small consequence.

It seems to us, therefore, of no little interest that very recently two men in America should so have impressed themselves upon their time and generation that almost simultaneously their students and associates should have planned to recognize publicly their services to the cause of medical progress. We refer, of course, to Prof. Wm. H. Welch, of Baltimore, and Prof. Abraham Jacobi, of New York, two men who in very different ways will stand pre-eminent in the history of American medicine. Dr. Welch typifies the teacher, a man whose devotion to the study of the problems of disease, both by his own researches and indirectly through his pupils, has done much to deepen our conceptions of the true significance of medical teaching. The recognition of this work has recently appeared in a memorial volume published by his students, which bears on its title-page the following words: "Contributions to the Science of Medicine, dedicated by his pupils to William Henry Welch, on the twenty-fifth anniversary of his Doctorate." There is no preface or introductory note; no doubt, a designed omission. The volume contains thirty-eight articles, by forty contributors, Dr. Welch's former and present pupils, on various subjects connected mainly with pathological anatomy, filling, with the index, 1,066 pages. Many of the papers are of great scientific value and none are trivial. The general appearance and workmanship of the book are quite beyond criticism. It is profusely illustrated, largely with heliotype plates, and, as its frontispiece, has an admirable heliotype of Dr. Welch. Perfect as the volume is as a specimen of the bookmaker's art, it goes without saying that its chief interest lies in the fact that it represents the influence of one man on the professional life of his time, and stands unique in America as a public recognition of the debt which students owe to a great teacher.

Almost coincidently with the formal exercises attending the presentation of this volume to Dr. Welch in Baltimore, a similar ceremony was taking place in New York in commemoration of the seventieth anniversary of the birth of Dr. Abraham Jacobi. We have, in a previous issue, referred at length to the complimentary dinner given Dr. Jacobi, and to the exercises of that occasion. As a more permanent memorial of the appreciation in which Dr. Jacobi is held by his colleagues a "Festschrift" has been prepared, somewhat less elaborate than the volume to Dr. Welch, but of hardly less interest. This volume was presented to Dr. Jacobi at the dinner given in his honor, May 7th. It contains papers from the pens of fifty contributors both in America and Europe, men eminent not only in pediatrics, but also in other departments of medical investigation. In a short preface the outline of Dr. Jacobi's eventful professional and political life is given, which is epitomized in the following words, which we quote: "Dr. Jacobi's fame does not rest alone upon his greatness as a teacher and writer. He has taken an active interest in all that is best in medicine and has, withal, been an active and public-spirited citizen. As author, practitioner, hospi-

tal physician and society worker, he has ever been in the harness. In all these various departments of professional endeavor, he has been a leader and has never been content to be a servile follower."

Within a few days still a third volume has come to our hands, which, while not precisely in the same category as those just mentioned, deserves much more than a passing notice. It is a volume of contributions from the William Pepper Laboratory of Clinical Medicine, University of Pennsylvania, in memoriam of the late William Pepper. The volume is in admirable taste, entirely in accord with the dignity of the object for which it is designed, and contains a number of papers of great scientific value.

The custom which has this year been so auspiciously inaugurated of recognizing in such substantial and appropriate ways the services of our distinguished medical men, we sincerely hope may continue to grow into a fixed custom of the country. Such recognition, always bestowed with care, can have no other effect than to elevate the dignity of the profession of medicine, by granting such honors where they justly belong, to those men only who have done their share in materially advancing the cause of medical education and research.

ALCOHOL IN THE TROPICS.

A STATEMENT recently made by a writer in one of our contemporaries [1] to the effect that the use of alcohol is a physiological requirement in the tropics appears to have attracted considerable attention in the lay press — far more than would seem to be warranted by the circumstances. No fact has been more definitely settled through the efforts of the white race to colonize the tropics than that the use of alcohol, always undesirable, is here a source of positive danger. Medical men of ability and long residence in hot climates are well agreed upon this point. This fact is so well known to the laity that much of the interest attaching to the statement mentioned above — outside of the opposition at once excited among the temperance element — is undoubtedly due to the audacity of the proposition to brush aside the results gained by bitter experience during the past centuries.

The writer above referred to makes little effort to sustain his views by the opinions of others, and it is more than doubtful if he could find scientific support for the attitude taken. He does, however, make the claim that "Experience has demonstrated that in a hot climate the moderate use of intoxicating drink is essential to health and efficiency." To this claim we take decided issue.

Beginning with the admirably conducted expedition against the Ashantis in 1873, the British soldier has rarely been allowed the ration of spirits when on campaign in the tropics to which he is entitled on field service in temperate climates. This deprivation was the result of earnest representations on the part of observing officers, both line and medical; and the reports of the medical officers accompanying subsequent expeditions have been uniformly enthusiastic in favor of the substitution of tea for alcoholics. Their reports are, however, expressions of opinion merely, and it is extremely interesting to see how the position assumed by them is fortified by figures. The British army is stationed at points all over the world in the temperate zone and in the tropics. The medical statistics of the British Army are presumably accurate and the use of alcoholics by the British soldier, as he changes from station to station, is presumably the same. According to the article above referred to, the amount of drunkenness, death and constant inefficiency in the British Army due to the use of alcohol should be greater in the temperate zone than in the tropics. On referring to the British Army Medical Department Report for 1897 it is seen that quite the opposite is the case. The figures given for alcoholism and its results in this report are as follows:

Place.	Year 1897. Ratio per 1,000 strength.			Decade 1887-96. Ratio per 1,000 strength		
	Admissions to Hospital.	Deaths.	Constantly non-effective.	Admissions to Hospital.	Deaths.	Constantly non-effective.
England	1.7	.01	.06	2.3	.04	.08
Scotland	1.9	.04	.05	2.8		.06
Ireland	1.4	.04	.05	2.0	.02	.06
Canada	3.7		.07	3.2		.09
South Africa	.4		.03	3.0	.03	.08
Gibraltar	8 9		37	5.0	.02	.18
Bermuda	11.2		.30	9.1		.29
West Indies	15.6	.74	.32	7.8	.08	.19
Mauritius	14.5		1.82	20.0		1.20
Ceylon	4.5		.12	4.8	.08	.17
China	6.4		.34	3.2	.15	.16
Straits Settlements	3.0		.07	6.2	.08	.27
India	5.2	.03	.22	7.4	.07	.24

On averaging these figures together it is seen that for the five stations in the temperate zone — England, Scotland, Ireland, Canada and South Africa — the ratio of admissions for alcoholism in 1897, per one thousand strength, was 1.8; the death-rate from alcoholism was .018 and the constant ineffectiveness from the same cause was .052. For the stations in hot and tropical climates — Gibraltar, Bermuda, West Indies, Mauritius, Ceylon, China, India and Straits Settlements — the admission rate for alcoholism during the same year was 8.68 per thousand and the death-rate from the same cause was .09 and the constant non-efficiency was .445. For the decade 1887-96 the rates per thousand were: For cold climates 2.64, .016 and .072; for hot climates 7.93, .06 and .337. These results are extremely interesting, since they show that not only do four times as many British soldiers enter hospitals in the tropics for alcoholism as do in temperate climates, but also that the death-rate from alcoholism is more than four times as high in hot climates as in the temperate zone.

Full data as to the relative influence of alcohol in producing inefficiency among United States troops

[1] Philadelphia Medical Journal, April 7, 1900.

serving in the tropics and at home stations are not as yet available; but the report of the Surgeon-General of the United States Army for 1899, which mentions deaths alone, shows that during the period May, 1898, to June, 1899, inclusive, the death-rate from alcoholism was .14 per thousand among troops serving in the United States and .296 for troops serving in Cuba, Puerto Rico and the Islands of the Pacific — or more than twice as large in the tropics as in temperate regions.

If it be objected that soldiers actually drink less in the tropics, then the above figures for the troops of Great Britain and the United States should obviously be increased to correspond with the deficiency in the alcohol used; if the soldier is said to drink more liquor in the tropics than in a cool climate, the evil results of such excessive drinking are shown by the above figures. In either instance the claim that the use of alcohol is desirable in the tropics is refuted beyond the possibility of discussion. In the light of such figures it is apparent that if the claim above mentioned possesses any value it is merely such as might attach to the personal opinion of a single observer.

It is furthermore to be borne in mind that under conditions of physical discomfort such as must prevail in the tropics, moderation in the use of alcohol is a matter of extreme difficulty. It is easy to conceive that a man temperate in a more northern region might easily fall into habits of extreme intemperance in the tropics, were he permitted to take the first step.

ADJUSTABLE SCHOOL FURNITURE.

AT a meeting of the Boston Society for Medical Improvement held April 2d, the subject for consideration was, "The Proper Seating of School Children." The subject aroused an active discussion, and led to the appointment of a committee, consisting of Drs. John G. Blake, Chairman; Edward M. Hartwell, Wm. M. Conant, Myles Standish and Robert W. Lovett, to investigate and report upon the subject of adjustable school furniture. The following propositions were suggested by this committee and submitted to the Boston School Board:

(*a*) That it is desirable to have all the new school buildings provided with the most approved form of adjustable school furniture.

(*b*) That such children as are now in schools supplied with fixed furniture who are found, upon medical examination, to require adjustable furniture, shall be supplied with such desks and seats.

(*c*) That when it is necessary to replace the worn-out furniture of fixed pattern in the old schoolhouses it shall be done by adjustable furniture.

After careful examination of the seats submitted by the various manufacturers, which we believe comprised the best to be obtained, and comparison of the different varieties of seats, the Committee are unanimously of the opinion that the Miller chair combines more completely the desirable features of a scientifically constructed chair than do any of the others.

With regard to the desk, the Committee are also unanimously of the opinion that the Boston School Desk with top adjustable for distances and height, made by the Chandler Company, possesses advantages for reading and writing not equalled by any other desk submitted to the Committee. Your Committee feel that the additional cost of eighty-five cents more for seat and desk combined, of the pattern mentioned above, is not worth taking into account in considering the great benefits which the pupils would derive from the use of these forms of school furniture. The small increase in the cost of the seat, fifty cents, is made possible by Professor Miller's refusal to patent his chair, for which he deserves and should receive the commendation of all school authorities as well as of the medical profession.

The Committee earnestly hope that the school authorities will give earnest, immediate and, if possible, favorable consideration to these recommendations.

The foregoing recommendations were referred to a sub-committee of the School Board on hygiene and physical training, which has recently reported on the matter. We quote the report in part, signed by S. H. Calderwood, Chairman:

The Committee on Hygiene and Physical Training, to whom was referred, May 22d, a communication from Dr. John G. Blake, chairman of a committee appointed by the Boston Society for Medical Improvement on the subject of adjustable school furniture, report that they have granted a hearing upon this matter, and have very carefully considered the recommendations and views expressed by those present, many of whom have devoted much time and thought to the question of providing scientifically constructed furniture for the use of school children. Your Committee believe that the time has arrived for the general adoption in the public schools in Boston of the most approved form of adjustable furniture, and that the old-style furniture of fixed pattern that is now in use should be gradually displaced as opportunity serves and means permit. Your Committee have also considered this matter in conjunction with the Committee on Schoolhouses and the joint Committee have given expression to their conclusions by recommending the passage of an order presented at this meeting of the Board. Your Committee desire to express their indebtedness to the Boston Society for Medical Improvement for its interest in this important matter and return their thanks for the valuable suggestions and recommendations which it has submitted.

It is much to be hoped that this most recent effort at reform may show some definite result in the near future. The matter was vigorously agitated a number of years ago by the medical profession without noticeable effect; in fact it is hard to see how physicians can do more than they have already done in impressing the importance of proper school furniture. The accomplishment of any far-reaching reform must naturally rest with the school authorities. The plan of a gradual substitution of new chairs of improved type as the need of them arises would certainly do much toward reducing the expense of such an innovation, and at the same time would gradually lead to the proper seating of all school children.

MEDICAL NOTES.

MEETING OF ASSOCIATION OF AMERICAN MEDICAL COLLEGES. — The Association of American Medical Colleges had an interesting and profitable meeting at Atlantic City, June 4th and 5th, at which several educational papers were read and vigorously discussed. Fifty-six colleges were represented. Such amendments as would exclude "Sun-down" medical colleges were adopted to take effect in July, 1901. Dr. Albert R. Baker, of Cleveland, was elected President; Thos. H. Hawkins, of Denver, First Vice-President; W. H. Earles, of Milwaukee, Second Vice-President. Drs. Parks Ritchie, W. W. Keen and J. M. Dodson were added to the Judicial Council. The Cooper Medical College, of San Francisco, the Medical Department of the University of Kansas and the American Medical Missionary College, of Chicago, were elected to membership. A committee was appointed at the request of the Federation of State Examining Boards to co-operate with a similar committee appointed by them to consider common interests. This committee consisted of Drs. W. J. Holland, Dudley S. Reynolds, Wm. E. Quine, W. J. Means and Parks Ritchie. The papers and proceedings of the Association are published in the *Bulletin of the American Academy of Medicine*.

DENTISTS AT THE INTERNATIONAL MEDICAL CONGRESS. — In response to numerous requests, the Executive Committee of the Thirteenth International Medical Congress has decided that dentists who are not doctors of medicine, but who have a State diploma either French or foreign, may be registered as members of the Congress in the Section on Stomatology. Names should be sent to the officers of the Congress, 21 Rue de l'École de Médecine, Paris.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, June 20, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 71, scarlatina 24, measles 121, typhoid fever 24.

BOSTON SOCIETY OF MEDICAL SCIENCES. — At the request of the President of the Massachusetts Medical Society, a meeting of the Society of Medical Sciences was held at the Harvard Medical School, on Tuesday, June 12, 1900, in connection with the Massachusetts Medical Society. Papers were read as follows: Dr. W. H. Robey, "Methods of Staining Flagella"; Dr. Franz Pfaff and Mr. Vejux-Tyrode, "On the Influence of Defibrination on the Secretion of the Kidney"; Dr. Eugene L. Opie (Johns Hopkins Hospital), "Pathological Changes Affecting the Islands of Langerhans"; Dr. Charles Harrington, "The Action of Drinking Water on Metals"; Mr. Ernest L. Walker, "A New Method for Distinguishing Human from other Mammalian Blood, in Medico-legal Cases."

LONG ISLAND TRAINING SCHOOL FOR NURSES. — The second class of nurses from the training school at the Long Island Hospital, Boston Harbor, was graduated June 11th, with appropriate exercises. Remarks were made by the Chairman of the Board of Trustees and members of the visiting staff.

DEATH OF TWO PHYSICIANS FROM SEPTICEMIA. — It is reported that Dr. Elbridge K. Leonard, of Rockville, Conn., and Dr. Melanchthon Storrs, of Hartford, have both died of septicemia resulting from infection at an operation on abscess of the liver.

NEW YORK.

MORTALITY STATISTICS. — The reports of the Bureau of Vital Statistics for the month of May show a gratifying decrease in the mortality of the city. For the four weeks ending June 2d, the mortality represents an annual death-rate of 18.83, against 22.87 for four weeks in April. This is still somewhat higher than the death-rate for the corresponding four weeks in 1899, but it is noticeable that the rate for the week ending June 2d is lower than that for the corresponding week of last year; the figures being respectively 16.63 and 17.67. This is the first time since the beginning of the present year that the death-rate has been lower than at the same period of 1899. The greatest reduction is in pneumonia, the weekly average of deaths from which was 215, against 359 for four weeks in April. The weekly average of deaths from influenza, aside from pneumonia, declined from 36.75 to 7.5; scarlet fever, from 16.75 to 11.5; measles, from 26.75 to 18.75; whooping cough, from 18.5 to 14.5; bronchitis, from 58 to 35.25, and pulmonary tuberculosis, from 193 to 174.5. It will be seen, however, that pneumonia is still causing considerably more deaths than phthisis. There is but little change in the mortality from diphtheria and from typhoid fever, the latter being, as usual, very small. There was one death from small-pox in April, as there was in May.

STATE HOSPITAL FOR CRIPPLED AND DEFORMED CHILDREN. — At a meeting of the Board of Managers of the New York State Hospital for the Care of Crippled and Deformed Children, created by the last Legislature, which was held at the residence of the President, Bishop Potter, on June 14th, the Committee on Site reported that it had leased a house and grounds at Tarrytown, on the Hudson, and that the changes required for equipping the premises for hospital use would be completed early in the autumn. The following were elected members of the consulting medical board: Drs. Francis Delafield, Robert F. Weir, N. Gilman Thompson, Joseph D. Bryant, Lewis A. Stimson, A. Alexander Smith and Reginald H. Sayre, of New York; Roswell Park, of Buffalo, and L. A. Weigel of Rochester.

COMMENCEMENT AT COLUMBIA UNIVERSITY. — At the one hundred and forty-sixth annual commencement of Columbia University, which was held on June 13th, the degree of M.D. was conferred upon 167 graduates, the largest class ever graduated from the College of Physicians and Surgeons. The degree of LL.D. was con-

ferred on Prof. Abraham Jacobi. The Stevens Triennial Prize for the best essay showing results of original research was awarded to Dr. James D. Voorhees, the Alumni Association Prize to Dr. David Bovaird, Jr., and the Alonzo Clark Scholarship to promote the discovery of new facts in medical science to Dr. Augustus J. Lartigau.

SMALL-POX IN COLUMBIA COUNTY. — An outbreak of small-pox has occurred among 500 negroes employed in brickyards at Stockport, Columbia County, and on June 15th it became necessary to call out the Hudson Company of militia to aid in enforcing the quarantine regulations of the State Board of Health against a number of laborers who refused to be vaccinated.

NEW COTTAGE HOSPITAL FOR INFANTS. — The corner-stone of the new cottage hospital for very ill infants, in connection with the Seaside Hospital of St. John's Guild at New Dorp, Staten Island, which is to be the gift of Mrs. Frederic Lewis, was laid on June 12th. One of the addresses on the occasion was made by Dr. Abraham Jacobi.

DEATH FROM CHLOROFORM ANESTHESIA. — It is reported from New York that a patient about to be operated upon for appendicitis died during the administration of the anesthetic, which was chloroform. The heart had shown no abnormality preceding the anesthesia.

Correspondence.

LITHIASIS PREPUTIALIS.

BOSTON, MASS., June 3, 1900.

MR. EDITOR: — In the *Allg. Wiener medicinische Zeitung*, September 12, 1899, is reported a case of lithiasis preputialis, first published in *La Grèce Médicale*, No. 7, 1899.

The case is communicated by Dr. Alex. Louis, of Velessa, Macedonia. I have made a translation of the article, and wish to add a similar case observed by myself. The case of Dr. Louis is as follows:

Lithiasis of the prepuce is extremely rare, and even in medical works only few cases are recorded. M. G., age forty-five years, is the father of three children. He concealed his condition from motives of false modesty, until his sufferings became so great that this was no longer possible, and forced him to seek medical aid. The condition had lasted seven years. At first the pain was slight, but has continually increased to the present time. After some hesitation he allowed an examination, in which the following condition was disclosed: The prepuce had externally the form of a pear, and the entire penis that of a clock pendulum. The circumference was 25 centimetres. The organ was painful to the touch, the feeling to the finger being that of a bag full of sand. From the preputial orifice issued a constant flow of a mucopurulent fluid of fetid ammoniacal odor. The urethral orifice was red, and barely visible at the bottom of the preputial opening. A sound introduced beneath the prepuce at once came in contact with a large deposit of stones, which it was impossible to remove on account of the phimosis. The prepuce was incised to the extent of four centimetres, and the stones removed and the glans and prepuce carefully cleansed. The glans was deeply indented from the pressure of the calculi. Healing was rapid and complete. The number of stones, not reckoning the sandy detritus, was 110, of which 30 reached the size and diameter of a pea, the others diminishing to that of a grapeseed. It is of interest to note that the patient during the whole time of his disease fulfilled his marital duties until very shortly before the operation, when the increasing pain prevented coitus.

My own case: A. B. age twenty-two years, single, of neurotic ancestry on mother's side, and presenting certain stigmata of degeneration, consulted me on account of a condition which troubled and puzzled him. He has always led a strictly moral life. At the age of eighteen, he was placed in an asylum on account of an onset of *folie de doute* accompanying, or closely following, puberty. He recovered after some months and has since attended to business in a large commercial firm. After much hesitation and with great mental perturbation he told me his trouble and consented to an examination. There was extreme phimosis of a greatly elongated prepuce. It was quite impossible to retract the foreskin to such a degree as to expose any part of the glans penis. The entire organ was small in relation to the development of the patient, and its proximal portion presented nothing peculiar. Its distal portion, however, was greatly enlarged, elongated and pendulous, presenting roughly the appearance of a small pear, over which the prepuce was tightly extended, and at the end of which it was so contracted as to form only a narrow purse-like opening, perhaps half an inch in length. The opening was directed to one side, and on urination the stream was discharged at an angle from the penis, soiling the clothing of the patient. The swelling was very hard, unyielding, and pressure upon it caused much pain. A greenish, puriform discharge constantly issued from the opening, which was excoriated and painful. The discharge was ammoniacal and very offensive in odor. No cause could be assigned for the condition. The effect upon the patient was most depressing and was rapidly inducing threatening mental symptoms, similar to those for which he had been previously under my care. Operation was advised, and at once accepted by the patient. The prepuce was laid open upon a director, and disclosed a perfect collar around the base of the glans, filling the sulcus, except at the location of the frenum, and prolonged upon the surface of the glans toward the meatus. This calcareous collar was perfect at the time of operation, but was unfortunately broken in removal. A suitable portion of the stretched and redundant prepuce was removed on either side, the flaps sutured, and treated with antiseptic lotions. Healing was quite uneventful and perfect.

The rarity of this condition leads me to desire that this case should be placed on record.

Yours respectfully,

ALBERT N. BLODGETT, M.D.

THE RECENT MEETING OF THE MASSACHUSETTS MEDICAL SOCIETY.

BOSTON, June 14, 1900.

MR. EDITOR: — The annual meeting of the Massachusetts Medical Society which this day marked the end of another year in the history of this ancient and honorable association will certainly take rank as one of the grandest and most successful events in the history of this Society. I think that the Society has never been so fully represented on such an occasion, and the quality of the work done has seldom been equalled. The provisions for the comfort and convenience of the members were ample, and though there was an unexpected increase in the number of those present at the banquet, all were amply cared for. I think the Society has been extremely fortunate in the selection of its Executive Committee, to whose efforts the excellent arrangements were due, and who have labored assiduously to ensure the successful accomplishment of their undertaking. The annual dinner was an especially attractive

feature, when more than a thousand members were assembled at table, and all were served with promptness and ease. It is easy to find fault upon an occasion of this kind, and to some extent this may be justified at times, but the arrangements for the meeting just ended were so judiciously made, and so perfectly carried out, that the thanks of the Society are certainly due to the committee in charge, for their unwearied and painstaking efforts.

Yours truly,
X. Y. Z.

EXPERIENCE WITH TUBERCULIN.

POMONA, CAL., June 7, 1900.

MR. EDITOR: — On June 23, 1898, I reported in your JOURNAL the use of Koch's new tuberculin on two consumptives. The conclusion drawn from its use was that the patients were benefited by it. About a year after its first use I again used it on these same patients with as near as may be the same results; their weight, strength and appetite were all increased. Subsequent events have, however, shown that they were not cured by it.

Truly yours,
C. D. NELSON, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JUNE 9, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Diphtheria and croup.	Measles.
New York	3,654,594	1148	388	20.16	11.08	1.28	3.84	1.68
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	409	114	22.80	9.84	1.44	4.08	2.64
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	215	67	23.46	15.18	1.38	2.76	.92
Baltimore	506,389	151	44	22.44	9.24	3.30	.66	.66
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	102	47	27.72	10.89	5.94	1.98	5.94
Washington	277,000	80	26	31.25	6.25	6.25	1.25	—
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	71	19	25.20	12.60	4.20	1.40	—
Nashville	87,754	—	—	—	—	—	—	—
Charleston	65,165	—	—	—	—	—	—	—
Worcester	111,732	38	12	18.41	18.41	2.63	5.26	—
Fall River	103,142	31	11	38.76	12.92	9.69	—	—
Cambridge	92,520	20	7	30.00	10.00	—	10.00	—
Lowell	90,114	31	11	12.92	9.69	9.69	—	—
New Bedford	70,511	9	1	11.11	11.11	—	—	11.11
Lynn	68,218	—	—	—	—	—	—	—
Somerville	64,394	14	4	14.28	28.56	—	7.14	—
Lawrence	59,072	22	4	8.30	4.15	—	4.15	—
Springfield	58,266	17	3	—	—	—	—	—
Holyoke	44,510	14	3	7.14	28.56	—	—	—
Brockton	38,759	3	—	—	—	—	—	—
Salem	37,523	13	7	—	—	—	—	—
Malden	36,421	8	2	—	12.50	—	—	—
Chelsea	34,235	7	3	—	—	—	—	—
Haverhill	32,651	10	2	10.00	—	—	—	—
Gloucester	31,426	7	1	14.28	—	—	—	—
Fitchburg	30,523	8	2	—	—	—	—	—
Newton	30,461	9	2	—	11.11	—	—	—
Taunton	28,527	10	3	20.00	20.00	—	—	—
Everett	28,102	6	2	—	—	—	—	—
Quincy	24,578	8	—	37.00	25.00	—	12.50	—
Pittsfield	23,421	—	—	—	—	—	—	—
Waltham	22,791	5	—	40.00	—	—	40.00	—
North Adams	21,583	6	2	16.66	16.66	16.66	—	—
Chicopee	18,316	7	4	28.56	14.28	—	—	14.28
Medford	17,190	—	—	—	—	—	—	—
Newburyport	15,036	1	—	—	—	—	—	—
Melrose	14,721	4	1	—	—	—	—	—

Deaths reported 2,479; under five years of age 792; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas and fevers) 562, acute lung diseases 321, consumption 282, diphtheria and croup 85, diarrheal diseases 49, measles 44, typhoid fever 30, whooping-cough 25, scarlet fever 24, cerebrospinal meningitis 14, erysipelas 9.

From typhoid fever Philadelphia 9, New York and Washington 4 each, Boston, Baltimore and Pittsburg 3 each, Providence 2, Fall River and Brockton 1 each. From whooping-cough New York 10, Philadelphia 5, Baltimore 3, Pittsburg and Washington 2 each, Boston, Worcester and Fall River 1 each. From scarlet fever Boston 8, New York 7, Philadelphia 3, Pittsburg 2, Baltimore, Washington, Worcester and Cambridge 1 each. From cerebrospinal meningitis New York 8, Boston and Providence 2 each, Philadelphia and Brockton 1 each. From erysipelas New York 5, Philadelphia 2, Boston and Taunton 1 each.

METEOROLOGICAL RECORD

For the week ending June 9th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		We'th'r. *		
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	Rainfall in inches.
S....3	30.01	62	70	53	94	92	93	N.E.	N.E.	15	18	O.	R.	.42
M...4	30.18	53	58	48	68	79	74	N.E.	N.E.	20	7	O.	C.	01
T....5	30.09	60	74	46	70	56	63	W.	S.	6	10	C.	C.	
W...6	30.11	68	81	56	57	65	61	W.	S.	1	9	C.	C.	
T....7	29.95	66	77	56	64	78	71	S.W.	S.	8	13	C.	F.	
F....8	29.75	69	80	58	81	89	85	S.W.	S.	12	9	F.	R.	.05
S....9	29.82	74	84	64	86	48	67	W.	N.	10	13	O.	C.	.04
☞	29.99		75	54			73							.52

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ☞ Mean for week.

RECENT DEATH.

WILLIAM PIERSON, M.D., one of the most prominent physicians of New Jersey, died at his home in Orange, on June 12th. He was born in Orange in 1832, and was the eldest son of the late Dr. Wm. Pierson. He was graduated from the Medical Department of the University of City of New York in 1852. He was one of the founders of the New Jersey State Medical Society and for thirty years its secretary. Later he became its vice-president, and at its annual meeting held at Atlantic City the week before his death, he was elected president of the Society.

BOOKS AND PAMPHLETS RECEIVED.

The Regeneration of the Crystalline Lens. By Robert L. Randolph, M.D. Reprint.

Transactions of the Associated Physicians of Long Island, June, 1898, to January, 1900. Vol. I.

The Present Status of Insanity in Virginia. By William Francis Drewry, M.D., Petersburg, Va. Reprint. 1900.

University of Pennsylvania; Contributions from the William Pepper Laboratory of Clinical Medicine. Philadelphia. 1900.

Pachymeningitis: Report of a Case and Autopsy. By Samuel E. Earp, M.S., M.D., and John T. Scott, M.D. Reprint. 1900.

Advanced Professional Work in Hospitals for the Insane. Progress in Clinical Study of Psychiatry. By Edward Cowles, M.D. Reprints. 1898-99.

A Study of the Blood in General Paralysis. By Joseph A. Capps, A.B., M.D. II. A Study of Leucocytosis Associated with Convulsions. By Fred Grant Burrows, A.M., M.D. Reprint. 1899.

Epilepsy with Retrograde Amnesia: A Medico-Legal Study of the Case of Amos D. Palmer. By Edward Cowles, M.D. II. Stigmata of Degeneration: Case of Amos D. Palmer. By Walter Channing, M.D. Reprint. 1900.

Gastrostomy for Traumatic Stricture of the Esophagus; Report of Case. Treatment of Cancer of the Cervix of the Uterus Complicated by Pregnancy. By George Ben Johnston, M.D., Richmond, Va. Reprints. 1899-1900.

A Manual of Obstetrical Technique as Applied to Private Practice, with a chapter on Abortion, Premature Labor and Curettage. By Joseph Brown Cooke, M.D., New York. Philadelphia and London: J. B. Lippincott Co. 1900.

Nerve-Cell Changes in Somatic Diseases: A Preliminary Communication. General Paralysis in Two Sisters, Commencing at the Age of Ten and Fifteen Respectively; Autopsy in One. On Changes in the Nerve Cells of the Cortex in a Case of Acute Delirium and a Case of Delirium Tremens. By August Hoch, M.D. Reprints.

Original Articles.

A STUDY OF TWENTY-FOUR CASES OF TYPHOID FEVER WITH SYMPTOMS OF PERITONEAL INFECTION; LAPAROTOMY.[1]

SUMMARY.—SEVENTEEN CASES OF PERFORATION OF INTESTINE; TWO CASES OF PREPERFORATIVE NECROTIC AREAS; ONE CASE OF RUPTURED MESENTERIC GLAND; THREE CASES CAUSE OF SYMPTOMS UNDETERMINED, DIAGNOSIS NOT CONFIRMED.

GROUPING AND ANALYSIS OF CASES;

GENERAL CONCLUSIONS; DETAILED REPORT OF CASES.

REPORTED BY GEORGE B. SHATTUCK, M.D., J. COLLINS WARREN, M.D., FARRAR COBB, M.D.,

Committee of the Boston Society for Medical Improvement.

THE whole number of cases studied by this Committee is 27, all coming in the years between 1895 and 1900; 9 cases from the Massachusetts General Hospital; 16 cases from the Boston City Hospital; 1 case from St. Elizabeth's Hospital, and 1 case from the Boston Children's Hospital.

In the year 1895 there are 3 cases, but only one of them will bear analysis as a case of genuine typhoid fever; 1 case in 1896, 4 cases in 1897, 5 cases in 1898, and 14 cases in 1899.

This is a striking illustration of the increase in the operative tendency. The data from which this analytical report has been made are the complete medical, surgical and post-mortem records of the several hospitals, together with the summarized statements and opinions sent in by the physicians and surgeons in attendance. From this available material a concise view of each case has been made with reference to all the important points bearing in any way on the diagnosis and treatment of peritoneal infection in typhoid fever.

The Committee would deprecate its critical comments of to-day being interpreted as fault-finding with the practice of earlier years; neither does the Committee forget that the ideal is not always, or under all conditions, to be realized in practice. Doubtless a nearer approach to the ideal should be aimed at and would now be possible than is found in most of the cases here reported. And the Committee is still further quite aware that the ideal itself — for example, in regard to such a matter as the value and application of the white blood count — is subject to further changes; the value of pain as a warning symptom also merits further study.

Of the 27 cases A, B and C must be thrown out of our consideration, because of no proof that they were genuine cases of typhoid. Cases B and C were both cases of advanced general peritonitis when first seen, and in both of them there was no proof that typhoid was the origin of the peritonitis.

Case A was brought to the City Hospital in a moribund condition, and showed general peritonitis at the operation. Cultures from the interior of the gall-bladder showed the presence of the bacillus typhosus. This, however, cannot be accepted as conclusive proof that the case was one of typhoid peritonitis. Cultures from the peritoneal fluid showed only the staphylococcus albus. It is an accepted fact that typhoid bacilli can and do remain active in the gall-bladder for months and years after an attack of typhoid fever. For example, Miller[2] has reported a case in which the bacillus typhosus was found in the gall-bladder seven years after an attack of typhoid fever. There is no proof, therefore, that the peritonitis in Case A might not have been of other origin than typhoid fever, and, therefore, it cannot be included in our list of cases for study. This series, then, embraces 24 cases, which are all undeniable cases of typhoid; there can be no controversy on this point.

Eighteen cases had a positive Widal serum reaction in addition to the evidence furnished by the clinical course of the case and the positive pathological evidence furnished by the operation or post-mortem examination. In 3 cases the Widal test was not made; in 3 cases the Widal test was negative. Two of the cases in which it was not made occurred in the years 1895 and 1896, a period of time before the use of the test.

Of the 6 cases in which the Widal test was not made or was negative there can be no doubt of the diagnosis of typhoid, because of the findings at the operation or the post-mortem which fully corroborated the clinical diagnosis. In 2 of the cases in which the Widal test was not made the diazo test was positive.

All of the 24 cases had symptoms upon which a diagnosis of intestinal perforation was made and for which an operation was performed.

Three of the cases (XXII, XXIII and XXIV) presented symptoms strongly suggestive of intra-abdominal infection, and accordingly were operated upon with a diagnosis of intestinal perforation, but at the operation no positive cause for the symptoms was found. Two cases recovered from this exploratory operation, and 1 died. These cases are of the greatest importance from the diagnostic point of view, and will be considered carefully when the subject of "Symptoms and Diagnosis" is taken up.

Case XIX had characteristic symptoms of acute sudden peritoneal infection, and operation discovered a general septic peritonitis, but did not determine the cause; therefore this case should not be classed with those in which the cause of the peritonitis is certain, although it certainly seems rational, on considering the history and the symptoms and the fact that several different thin places in the intestinal wall were found at operation, to consider it a case of perforation.

In Cases II and XVI the classic severe symptoms of perforation were simulated, but operation discovered the cause of the symptoms to be a general septic peritonitis originating in damaged and necrosed areas of peritoneum over the bases of one or more typhoid ulcers. These cases might be called cases of progressive peritoneal infection from threatened perforation.

In Case XXI the symptoms amply justified the diagnosis of intestinal perforation, but operation proved that the symptoms, which were identical with the usually accepted symptoms of perforation of the bowel, were due to a general septic peritonitis arising from a ruptured mesenteric gland.

So that out of the 24 cases of true typhoid only 17 were cases of peritoneal infection from actual perforation of the intestinal wall. Two cases were of general infection from threatened perforations or areas of necrotic peritoneum; 1 case of general infection from

[1] Report presented at a meeting of the Boston Society for Medical Improvement, April 16, 1900.

[2] Johns Hopkins Hospital Bulletin, May, 1898.

a ruptured mesenteric gland; 1 case of general infection from an unknown cause, presumably intestinal perforation; 3 cases had no certain cause for the symptoms which demanded operative interference.

Since it will be shown that in many cases no differentiation between the usually accepted symptoms of actual perforation and the symptoms of general septic peritonitis can be made, this series of 24 cases gives us, for further study, 21 cases of grave peritoneal infection in typhoid fever and 3 cases of mistaken diagnosis, but with symptoms of peritoneal infection.

Diagnostically and from the point of view of treatment all of these cases should go in under the head of acute peritoneal infection in the course of typhoid fever. It may be well, however, to analyze the two groups of cases separately, dividing the perforations from the other cases.

Of the 24 cases presenting acute abdominal symptoms, with or without discoverable cause, 18 were males and 6 were females. Of the 18 males 15 were under thirty years; 1 was forty-five years; 1 was thirty-eight years; 1 was thirty-two years; 14 cases were between the years of nineteen and thirty and 1 case was sixteen years. Of the females, 6 in number, 4 were between twenty and twenty-six years, 1 was forty years and 1 was sixteen years.

The total number of cases shows, therefore, that acute abdominal infection occurs most often in young adults between the ages of eighteen and thirty years; that it is most frequent in men; that it is rare in children. It is noteworthy that 2 of the cases presenting acute abdominal symptoms without discoverable cause occurred in young women, aged twenty and sixteen years, respectively.

These facts in regard to age and sex are in general accord with the investigations of Dr. R. H. Fitz and others, although the percentage of those under thirty years of age happens to be somewhat larger than in Dr. Fitz's tables.[3]

As to the question of typhoid perforation in children under twelve years of age, we have been able to find but 4 cases of operation for perforation in children under that age in all the cases reported in literature.

Cushing:[4] Boy, nine years old, on which case 3 laparotomies were done; the case recovered. Three cases are given in Keen's[5] tables of cases of operation for typhoid perforation.

All the cases but one were white in color. This proportion of blacks to whites would very likely be different in other parts of the country, where the proportion of the colored population to the white is greater.

In 18 of the 24 cases the clinical nature and course of the typhoid *was mild*, and in 15 of these 18 mild cases perforation or general septic peritonitis was present. The 3 cases which presented symptoms without certain cause were mild cases.

One case, XVII, was a "walking typhoid"; 6 cases, II, VI, VIII, XII, XIV and XX, were *severely sick* typhoids. All of these 6 cases had general septic peritonitis from actual or threatened perforation, and all died.

These facts are in accord with the hitherto accepted knowledge that intestinal perforation in typhoid frequently occurs in those cases of a mild type, or, in other words, there is no relation between the severity of the course of the fever and the likelihood of intestinal perforation.

The difficulty of the diagnosis of the peritoneal infection in cases of the severe type will be touched upon later.

The sudden fulminating symptoms in the severely sick cases will be found in the majority of instances to be due to a general septic peritonitis, which was often unsuspected and had slowly progressed. On the other hand, a sudden, acute onset in the mild type more often meant sudden intestinal perforation with extravasation. In certain of the severely sick cases in this series it would seem as if a diagnosis of the onset of the peritoneal infection was practically impossible.

The organic complications were very few: Three cases had mitral regurgitation amply compensated; 1 case in which operation discovered no cause for the symptoms had an especially feeble heart, with mitral regurgitation, yet this case recovered from the exploration; in 9 cases intestinal hemorrhages are noted; in 2 cases it occurred three weeks before the severe symptoms of perforation appeared; in 2 cases it occurred forty-eight hours before the severe abdominal symptoms, but there was a distinctly comfortable period between the occurrence of these hemorrhages and the sudden onset of abdominal pain. In 3 cases intestinal hemorrhages preceded and coincided with the beginning of peritoneal infection. Case XIX had daily intestinal hemorrhages for three days before sudden abdominal symptoms. Case XII had a severe hemorrhage five days before the symptoms for which operation was done; but this case was so sick and stupid as to justify the supposition that perforation probably took place long before the foul and evidently long-established general peritonitis was diagnosed. Case VI had two severe hemorrhages just preceding and coincident with the perforation. In 2 cases intestinal hemorrhages are noted after the operation. In Case I a severe hemorrhage five days after the operation was undoubtedly the cause of death.

Intestinal hemorrhage, inasmuch as it must come through extensive ulceration of the intestinal wall, and since this may mean proximity to the peritoneal coat of the intestine, must be to a large extent a danger signal of perforation. The occurrence of intestinal hemorrhages, therefore, should properly demand a close watch for the symptoms of beginning peritoneal infection, frequent examination of the abdomen to detect tenderness or abnormal rigidity and muscular spasm, associated with frequent leucocyte counts. The occurrence of acute abdominal pain following and coincident with intestinal hemorrhage should lead to the suspicion of peritoneal infection.

THE WEEK IN THE DISEASE IN WHICH PERITONEAL INFECTION TOOK PLACE.

Of the cases in which perforation and general peritonitis existed the acute abdominal symptoms appeared at the following times: In 5 cases at the end of the second or first of the third week; 8 cases at the end of the third week; 1 case during the fourth week; 4 cases during the fifth week; 1 case during the sixth week; 1 case during the ninth week; 1 case during the eleventh week in a relapse.

Of the cases operated upon under a mistaken diag-

[3] Transactions of the Association of American Physicians, vol. vi, p. 200.
[4] Johns Hopkins Hospital Bulletin, 1898.
[5] Surgical Complications and Sequels of Typhoid Fever.

nosis 1 was in the fourth week, 1 in the fifth week and 1 in the sixth week. The diagnostic symptoms of intestinal perforation in typhoid as they are usually understood, namely, sudden abdominal pain, fall of temperature, collapse, general abdominal rigidity and tenderness, with or without vomiting, anxious facies, coming on without warning, do not present themselves as a complete picture in any one of this series of cases. The majority of the cases show records of definite warning symptoms, or, in other words, present evidences of a gradual onset of peritoneal infection.

It is, in fact, rational to conclude from a study of the symptoms in these cases, together with the findings at operation, that the severe symptoms corresponding to the ordinary text-book picture of intestinal perforation in typhoid were, in the majority of cases, caused by the general septic peritonitis resulting from a perforation or a threatened perforation, the occurrence of which (the perforation or local area of infection) was indicated more or less plainly by symptoms of less severity, which antedated the severe or so-called diagnostic symptoms by a definite number of hours.

If it is one thing to operate for intestinal perforation, and a decidedly different thing to operate for a septic peritonitis resulting from a perforation, the fact should be thoroughly understood that the severe and usual diagnostic symptoms in this class of cases meant that septic peritonitis had already existed for some time, and that the perforation took place at a previous time and was evidenced by milder and more localized symptoms. It is a fact that in the majority of these cases definite premonitory symptoms are recorded at a time more or less remote from the severe symptoms which first led to the diagnosis, and for which the physician called the surgeon in consultation.

Seven cases of the 21 in which operation found cause for the symptoms, namely, I to VII, inclusive, presented a sudden, acute picture of grave abdominal infection without *any* premonitory symptoms. Of these 7 cases 5 (I, III, IV, V and VII) were mild typhoids, whose general and mental condition was favorable to the noting of abdominal pain. Two cases (II and VI) were very sick, stupid and semi-conscious; a class of cases in which the occurrence of considerable localized abdominal pain might not be noted. In Case II the symptoms, sudden though they were, were due to a general peritonitis from the damaged peritoneum over the base of one or more ulcers, and not due to a sudden perforation. In Case VI the sudden symptoms were caused by the presence of a general peritonitis which had extended from a localized abscess originating from the intestinal perforation which at its appearance had given no symptoms, so that of the 7 cases which presented fulminating symptoms and which most closely conformed to the hitherto established idea of the symptoms of intestinal perforation only 5 proved to be due to *actual sudden perforation*, while 1 was not a case of perforation at all, and in the other the perforation and progress of the localized peritonitis with abscess formation did not cause any symptoms.

The sudden onset in these 7 cases presents a different picture in the 5 cases in which the symptoms were proved to be due to actual perforation. In these cases we have the symptoms of sudden severe pain coming on without warning, more or less localized in the right iliac region, accompanied by localized muscle spasm and tenderness, with the varying amount of shock. In the 2 cases in which the symptoms were due to general peritonitis, we have a picture suggesting general peritonitis, marked collapse, great distention, and general tenderness and rigidity. It might be concluded from a study of these 7 cases that in mild typhoids the appearance of sudden severe abdominal symptoms without any previous abdominal pain or tenderness may most often mean sudden intestinal perforation with extravasation into the general peritoneal cavity, and that the symptoms may vary, the chief symptoms being sudden pain, tenderness and muscular spasm localized, attended with more or less marked shock; but in very sick and lethargic cases the appearance of severe abdominal symptoms without warning most often means the presence of general septic peritonitis originating in some one of the possible sources of peritonitis in typhoid, the gradual onset of which it has been impossible to diagnose because of the sick and stupid condition of the patient.

It has been stated that in the above 7 cases there were no warning symptoms. By this is meant direct abdominal symptoms — pain, tenderness and muscular spasm. It should be stated, for the sake of completeness, that 3 cases had one or more intestinal hemorrhages on the two days preceding the acute abdominal symptoms. One case had several hard chills without hemorrhage during the twenty-four hours preceding the onset of the peritoneal symptoms. The occurrence of chills as a symptom of peritoneal infection in typhoid is probably rare. It can only be a symptom leading to suspicion of infection when it is un associated with hemorrhage.

J. F. R. Gairdner[6] states that rigor as an initial symptom of peritoneal infection in typhoid is uncommon. He noted it in only 2 cases out of 47 studied by him. It is noteworthy that in 1 of his cases and in the case of Jenner the peritonitis ushered in by rigors was due to the rupture of a softened mesenteric gland. In Case XXI, the only case of our series of peritonitis from the same cause, no chill occurred. In the absence of intestinal hemorrhage to account for rigors it might not be irrational to suppose that it might occasionally be present in the early stages of peritoneal infection.

In those 3 cases in which no cause for the symptoms was found at operation the onset of the same was gradual. These cases will be referred to again in the subject headed "Symptoms and Diagnosis."

We have 14 cases, namely, Cases VIII to XXI, inclusive, with more or less gradual onset of the abdominal symptoms. Eleven of these are cases of intestinal perforation and resultant general septic peritonitis; 2 are cases of general peritonitis without perforation; 1 a case of general septic peritonitis of unknown origin, though probably due to a perforation.

One of the perforative cases (Case XVII) was a "walking typhoid," and had probably had general peritonitis for at least thirty-six hours before entering the Massachusetts General Hospital.

In all of these 14 cases *distinct warning symptoms* antedated equally distinct severe and diagnostic symptoms. The milder symptoms, which we must conclude marked the beginning of the peritoneal infection, were chiefly various degrees of abdominal pain and

[6] Glasgow Medical Journal, 1897, vol. xlvii, p. 103.

tenderness, either localized or general, complained of by the patient. All of these 14 cases were mild types except 4. In only 1 of the 14 cases was any complaint recorded of abdominal pain until the complaint ushering in the severe symptoms, and in the single exception to this the complaint of abdominal pain antedated the actual perforation by some weeks.

In 4 cases abdominal distention throughout the course of the fever is noted. In 9 cases there is no record of any abdominal complaint or abnormality until the peritoneal infection was under way. In every one of these cases recorded *complaint by the patient of abdominal pain* was followed by peritoneal infection. The severe symptoms followed these warning symptoms at various intervals in every case, and there can be little doubt that the severe symptoms, when they appeared, meant that the peritoneal infection had become general and alarming.

An analysis of these premonitory symptoms shows that in 6 cases the pain complained of was general abdominal pain; in 3 cases localized in the left iliac region; in 4 cases in the right iliac region; in 1 case in the lower abdomen; in 1 case general abdominal pain, and also pain in the rectum and bladder; in 1 case the pain began in the epigastrium and later became marked in the right iliac region. It is much to be regretted that the importance of this abdominal pain was apparently not appreciated, as shown by the case records.

In 3 cases *comparatively* complete physical examination is recorded as made at the time. In no case was there a record of as careful an examination of the patient in every detail as the importance of the symptoms demanded, so that our knowledge of the accompanying conditions of tenderness, muscular spasm, leucocytosis, pulse and temperature is insufficient.

In 2 cases the complaint of pain was preceded by vomiting. In only 2 cases was the record of a leucocyte count made, and in these cases it appears that the blood count was only done once. As will be shown under the head of "Leucocytosis as a Symptom," an isolated blood count is of little or no value. In 1 case general abdominal tenderness and rigidity were noted, and in 2 cases there was general tenderness. In 4 cases there is no record of any physical examination, but a record *that morphine was given*. In 3 cases it is noted that the pulse and temperature were rising. This warning abdominal pain preceded the severe symptoms by hours and days; it appeared in 1 case sixty hours before; 1 case forty-eight hours before; 1 case twenty-four hours before (Case XVII); 4 cases twelve to fifteen hours before; 4 cases eight hours before; 3 cases three to five hours before. It is noteworthy that the 2 cases in which no actual perforation but general peritonitis from other causes existed had equally marked advanced pain.

Cases XVI and XXI, where the severe symptoms followed just as in the cases of perforation, point plainly to the reasoning that the early pain in these cases was due to local peritoneal infection, and that the severe symptoms were due to the establishment of a general infection.

The severe abdominal symptoms in every case determined the diagnosis and the decision to operate. In general these symptoms were those of general septic peritonitis, namely, general abdominal pain, severe; general tenderness and rigidity, with distention, collapse, poor pulse and anxious facies.

In only 3 of the cases was there any vomiting. The classical sudden fall of temperature is not present in many of the cases. The temperature fell somewhat in a few cases. In 2 cases it fell to normal, and began at once to rise; in 1 case it fell to and remained subnormal; in 3 cases a slight drop of temperature is noted; in 6 cases there was no fall of temperature, and in 3 cases it is recorded as rising.

In 8 cases a leucocyte count was taken at a time corresponding to these severe symptoms; in 4 cases it showed leucocytosis; in 4 cases it showed no leucocytosis. The leucocyte counts are, however, of only relative value, as will be considered later under the heading of "Leucocytosis as a Symptom."

In only 2 cases was a record of obliterated liver dulness made.

The constant symptoms in every case are abdominal pain, general tenderness and rigidity, with distention, associated with collapse and rapid, feeble pulse.

A comparison of the severe abdominal symptoms in the two classes of cases — the 7 cases where warning symptoms were not present and the 14 cases with warning symptoms — shows *distinct differences* in the severe symptoms in those in which the sudden intestinal perforation and extravasation came on without warning. As has been stated, the severe pain, more or less localized, with shock and muscular spasm and tenderness, characterized the first set of cases, and the shock varied in the different cases. In 1 case the pulse was not over 100. There was no vomiting, no general abdominal tenderness or rigidity, and no distention in any case.

Contrasted with this first set of cases, the severe symptoms in the second set present a much graver picture. It is noteworthy that in the 2 cases in the first set, in which general peritonitis was the cause of the symptoms and not intestinal perforation, the picture corresponds to the severe picture in the second class of cases.

It should be noted that if the signs of actual perforation with extravasation are local to a great extent, as in the 5 cases of our first set, a careful examination of all cases at the warning complaint of pain might in many of them give us definite diagnostic signs, as in Case III, for example.

A comparison of these two sets of cases — the 7 with sudden symptoms without perforation and the 14 cases with severe symptoms following premonitory pain — bears out the point that in most of them no positive diagnosis of perforation was made, but only a diagnosis of the general peritonitis resulting from the perforation.

THE TIME OF OPERATION AFTER SYMPTOMS APPEARED.

In the 7 cases with no warning symptoms operation was done within twelve hours in every case; 1 case within an hour and a half; 3 cases within four hours; 1 case within seven hours; 1 case within eight hours; 1 case within twelve hours.

At the operation general septic peritonitis was not evident to the eye in Cases I, III and VII. In Case V it is noted as just beginning and not far advanced. In Case IV the perforation was protected by weak adhesions, and no general infection had taken place up to the date of operation. In Cases II and VI general peritonitis was farther advanced and was evidently the cause of the sudden symptoms, so that only 5

operations can be said to have been for perforation itself and not for general peritonitis; and of these 5 cases 2 cases, namely, Cases I and IV, may be said to have recovered from the operation, although Case I died at the end of five days from excessive intestinal hemorrhage. Of the 14 cases which had warning symptoms 9 were operated upon within five hours from the severe symptoms, or from the time of positive diagnosis of perforation; 1 case within eight hours; 1 case within nine hours; 3 cases within twenty-four hours; 3 cases, however, were not operated upon for twenty-four hours after general peritonitis was plainly evident.

Reference to the annexed table will show that the average time of the operation after the early warning symptoms was twenty-three hours.

NUMBER OF HOURS ELAPSING BEFORE OPERATION IN THE 14 CASES WITH PREMONITORY SYMPTOMS.

After first pain and warning symptoms	20 hours.
" " " "	12 "
" " " "	48 "
" " " "	11 "
" " " "	15 "
" " " "	24 "
" " " "	20 "
" " " "	12 "
" " " "	60 "
" " " "	8 "
" " " "	48 "
" " " "	6 "
" " " "	12 "
Case of Bloom, XVII	?
After severe symptoms	3½ hours.
" "	8 "
" "	24 "
" "	3 "
" "	3 "
" "	9 "
" "	5 "
" "	3½ "
" "	24 "
" "	3 "
" "	4 "
" "	2 "
" "	34 "
Case of Bloom, XVII	? "

If it is granted that the early pain, etc., meant perforation or beginning peritoneal infection, and the severe symptoms meant general septic peritonitis, then it must be granted that operation took place from six to sixty hours after it was first indicated.

In all of these 14 cases the operation should be considered as primarily directed against the septic peritonitis and not the intestinal perforation. The recoveries from the operations in this class of cases are Cases XVI and XVII. Case IX is reported to have recovered from the operation for one perforation and to have lived eight days, until a second perforation necessitated a second operation, followed by death. It has been seen in the analytical report of this case that such a view of it cannot be permitted. It seems just to decide that this case did well after the first operation, until the extensive necrotic changes in the cecum involved the first sutured area and caused giving way of the sutures and a second extravasation.

SITUATION OF THE PERFORATION AND SITUATION OF THE DAMAGED AREAS.

We have in this series of cases 17 cases of true intestinal perforation and 2 cases of threatened perforation, with damaged and necrosed peritoneum. In every case the perforation or impending perforation was in the ileum.

In 7 cases it was within one foot of the cecum; in 4 cases it is noted as close to the cecum; in 1 case two feet from the cecum; in 1 case three feet from the cecum; in 1 case four feet from the cecum; in 5 cases the site is not recorded; in 3 cases it is recorded to have been the size of a "pin's head"; in 2 cases the "size of a dime"; in 1 case the size of a "split pea"; in 1 case to have been a large, irregular hole; in 1 case two perforations close together, near the cecum. In only 1 case (Case XV) was a second perforation found at the post-mortem.

In Case XIV the perforated coil of intestine was found situated low down in the pelvis, and in this case the initial pain complained of was referred to the region of the rectum and the bladder.

The method of closure of the perforation in every case but one consisted of inversion of the hole with silk sutures. In 1 case (Case XI) the ulcer was resected by a V-shaped incision. In Case X two rows of silk Lembert sutures were used, causing extreme inversion of the intestinal wall. This case died within thirty-six hours, with extreme abdominal distention and obstinate vomiting. At the autopsy it was found that the use of the two rows of sutures had reduced the lumen of the intestine to such an extent that it only took the top of the little finger, and that it was obstructed by a moderate amount of hard fecal matter. It seems legitimate to raise a query as to whether this case died from peritoneal infection or from intestinal obstruction, from the great inversion of the wall of the gut.

In 3 cases, in addition to suturing perforations or threatened perforations, additional suspicious thin places in the intestinal wall were inverted. This procedure, provided the condition of the patient justifies the expenditure of the extra time, is certainly advisable in all operations for typhoid perforation. It has been advocated by Sifton[7] and also by Hill in a case reported by Keen.[8]

In 7 cases out of the 21 the abdominal incision was median; in 2 cases the incision is not recorded; in 12 cases the primary incision was in the right iliac region. In only 2 cases are counter openings for irrigation and drains noted. The right iliac incision proved most capable of allowing speedy access to the infecting lesion. In 2 of the cases where the median incision was used it is especially recorded that long overhauling of the intestines was needed before the perforation was found. In 1 of the cases in which the median incision was used the time of operation is recorded as one and a half hours. Certainly the site of the infected areas in this series of cases points to the routine employment of a right lateral incision.

PERITONITIS: KIND, AMOUNT, WITH THE BACTERIOLOGICAL FINDINGS.

Unfortunately, the value of this series of cases is much impaired by the lack of bacteriological data concerning the nature of the general infection. If this series of cases furnished complete records of a careful physical examination at the appearance of the first symptoms in every case, and also complete bacteriological evidence concerning the virulence of the peritonitis resulting from the initial infection, we should be much better equipped to arrive at some definite statistical basis for establishing an approximate prognosis in such cases.

Three cases, namely, Cases I, III and VII, operated on one and a half, three and eight hours after the sudden onset of the perforation, had no visible

[7] Chicago Clinical Review, vol. iv, p. 368.
[8] Surgical Complications and Sequels of Typhoid Fever.

macroscopical signs of general peritonitis. Case I lived nearly a week, and died from intestinal hemorrhage, and the autopsy showed no general peritonitis. Cases III and VII both died within sixty hours, one with the symptoms of general peritonitis and the other without such symptoms. There were, however, no bacteriological studies of the peritoneal infection in these 3 cases at the time of operation. Two of the cases may very probably have died from a virulent infection, which did not cause any visible signs.

Vincent [9] experimentally has called attention to the fact that a streptococcus peritoneal infection in typhoid is usually a fatal complication. Vincent's studies have been corroborated by Flexner and Fraenkel.[10] Cushing [11] reports a case in which operation was done within an hour or two after perforation, and at the operation no visible signs of general peritonitis were present. Cultures and cover-slip preparations from the fecal fluid pouring out of the perforation in the intestinal wall showed large quantities of streptococci, and the case died of streptococcus peritonitis.

It is perfectly within reasonable bounds to believe that one or more of the supposedly favorable cases in our series may have had a streptococcus infection. Certainly we have no evidence to the contrary.

Cases II and V show a beginning general peritonitis, as evidenced by gas and serous fluid free in the abdominal cavity, but indicated no injection of the peritoneal coat of the intestines. Both of these cases, so far as the macroscopical appearance went, seemed favorable, yet both died. Cultures taken in Case V showed a pure infection of the bacillus typhosus.

Case IV had no general peritonitis, as has been stated. Case XVI was one of general peritonitis arising from the same cause as in Case II, namely, damaged peritoneum; yet in Case XVI peritonitis was much more extensive macroscopically than in Case II, being evidenced by seroturbid fluid with fibrin flakes and with green fibrin patches on the intestines. Case XVI recovered; Case II died. Although Case II was a more severe typhoid, presumably the general peritonitis in one case was caused by a virulent infection, and in the other by a non-virulent; yet no bacteriological proof is available in either case.

General septic peritonitis in typhoid arising from threatened intestinal perforation from the necrosed and damaged areas of peritoneum over the base of ulcers must be accepted as a not very uncommon occurrence. J. F. R. Gairdner [12] has reported 5 such cases.

To sum up in regard to our first class of cases, namely, 7 with sudden onset of symptoms, 3 had no general peritonitis evident to the eye; 1 case had limiting adhesions around the perforation, with no general peritonitis; 2 cases had slight evidence of general peritonitis. These are all of them the most favorable cases for operation, for it must be said of them that operation was actually directed against the infecting cause and not against the resulting general infection. The bacteriology was studied in only one of these cases, and in this one a pure culture of the typhoid bacillus was found.

It is a fact that the typhoid bacillus has been very rarely found in the peritonitis of typhoid fever, possibly because, through delayed operation, cultures have not been taken until the typhoid bacillus was overgrown.

It is possible, and probable, that the others of these early and seemingly favorable cases for operation may have had a general virulent infection either with typhoid bacilli or streptococci. It is past controversy that fatal peritoneal infection can have taken place without causing visible macroscopical signs at operation or autopsy. Of the 14 cases of gradual onset or with early warning symptoms, in every one visible peritonitis was found at operation, and in the majority of cases it was evidently of comparatively long standing.

Comparing the two sets of cases, namely, the 7 cases with sudden onset and the 14 with gradual onset, we find that in operations done on the cases of sudden perforation within one to eight hours after the first symptoms there was found no general peritonitis, but at most a very slight beginning peritonitis; but operation done on those of gradual onset, within one to eight hours after the severe or diagnostic symptoms, found extensive general peritonitis — so extensive that in several cases the operator noted that this peritonitis must have existed many hours longer than the symptoms would lead one to suppose. The conclusion is plain that in these cases the perforation or the beginning peritoneal infection took place at a time more or less remote from the severe and diagnostic symptoms.

These 14 cases are cases of operation for general peritonitis which had existed for a longer or shorter time — in 1 case originating in a ruptured mesenteric gland; in another, threatened perforation; in 1 from an unknown cause; in 11 from intestinal perforation.

The prevailing type of peritonitis noted was the seropurulent, with fibrin flakes in the turbid fluid and adherent fibrin patches on the intestine. Nine cases are noted that had feces or fluid fecal matter in the intestinal cavity or fluid with a fecal odor. All of these cases were intestinal perforations. Two cases of intestinal perforation note a cloudy, turbid fluid without fecal odor.

Case XXI was a case of general seropurulent peritonitis originating in a ruptured mesenteric gland. Cultures showed this to be a pure infection of bacillus typhosus. In Case XVII punctate hemorrhages on the intestinal wall are noted, and brownish fluid in the peritoneal cavity without odor.

It is greatly to be regretted that in only 4 of these 14 cases were any bacterial cultures taken, and in certain of these the question arises as to their value, because of our incomplete knowledge as to how they were taken and because of incomplete reports of the differentiation of the various bacteria found. Flexner [13] and Cushing [14] dwell upon the necessity of making cover-slip preparations as well as plate cultures at the operation from the abdominal contents in cases of peritonitis, because of the well-known fact that the bacillus coli communis overgrows the other organisms in the mixed infection. Cushing says: "Undoubtedly the colon bacilli, being more in evidence, were frequently held responsible for peritoneal infection due to more virulent but culturally less active organisms."

Case XIV is recorded as showing an infection with colon bacilli and "other varieties of bacteria." Case

[9] Annales de l'Institut Pasteur, vol. vii, p. 141.
[10] Johns Hopkins Hospital Reports, 1895, vol. i.
[11] Philadelphia Medical Journal, March 3, 1900.
[12] Glasgow Medical Journal, vol. xlvii, p. 97.
[13] Johns Hopkins Hospital Reports, 1895, vol. i.
[14] Philadelphia Medical Journal, March 3, 1900.

XX is recorded as having turbid peritoneal fluid with fibrin flakes, infection with colon bacilli. Case XXI, resulting from a ruptured mesenteric gland, gave a pure culture of bacillus typhosus. Case XV is reported to have been a specially foul-appearing general peritonitis, in which the infection was colon bacilli, and "many others not differentiated." The 2 cases (Cases V and XXI) in which the peritonitis was found to be due to a pure infection of bacillus typhosus died — 1 within twelve hours and 1 on the fourth day.

The finding of the bacillus typhosus as the infecting organism in cases of peritonitis is exceedingly rare. At most, but 5 cases, including the 2 cases reported in this series, have been published. It may be suspected, reasoning from the evidence furnished by Case V and Case XXI, that when it does occur it is probably virulent and fatal.

DIAGNOSIS.

The diagnosis of the peritoneal infection within a sufficiently reasonable time from its beginning is a question of the greatest importance to physicians and surgeons. So far, our study of these cases has shown us that the diagnosis in 14 cases out of 24 was apparently made later than it might have been, and in 7 cases only once was it made as soon as possible, and that in 3 cases a mistaken diagnosis was made.

It seems fair to suppose that the majority of cases of intestinal perforation present a slow intestinal infection or a gradual onset, or that actual perforation may take place without fulminating symptoms. Cushing has referred to what he calls a "preperforative stage," or a "pre-extravasation stage," and has attributed the early complaints of pain to a slight involvement of the serosa and possibly to omental adhesions. He understands by his "preperforative stage" the "whole period between the first involvement of the serosa, with the formation of customary adhesions at this point, until these adhesions (which may for a time constitute the floor of the ulcer after the serosa has given way) have themselves become broken down, and general peritonitis has taken place." This condition of things is well illustrated in our Case IV, which is a typical case of pre-extravasation, because of delicate protecting adhesions.

It would seem, however, from a study of our cases, that the formation of protecting adhesions in perforation or threatened perforation of the ileum is exceedingly rare. Monad and Van Verts[15] state that in their study of this condition, adhesions, however slight, almost never occur when the perforation is situated in the ileum, and they further state that peritoneal infection is not always a rapid fulminating affair; that it may occur slowly from what they call "propagation" — that is, migration of the bacteria through the necrosed and damaged intestinal coats — and that this form of infection is no less worthy of consideration than the rapid infection from sudden intestinal rupture and extravasation of intestinal contents.

Intestinal ulcers certainly may have a preperforative stage, and by this we mean a stage of local peritoneal infection and bacterial involvement of the peritoneal coat — whether or not adhesions exist. This local infection may cause general infection without adhesion formation and without perforation. The pre-extravasation stage properly means a period of time after local peritonitis has taken place in which there is no extravasation of intestinal contents, either because of the necrosed portion of the intestinal wall remaining in place without dropping out, as in Case XVI or in Case II of our series, or because of adhesions, as in Case IV of our series. Local infection of the peritoneum causes pain of greater or less severity. This pain may not be appreciated and complained of in very sick and stupid typhoids, but in mild cases may be just as prominent a feature as the pain from the local peritoneal infection of appendicitis before perforation has taken place.

Our series of cases shows that this early pain was absent in only 7 cases out of 21; 5 of these 7 cases were mild cases, in which sudden rupture of the serosa and extravasation took place; 2 cases with equally sudden symptoms had a septic peritonitis already under way, which cases were so sick and stupid that it was impossible to diagnose the beginning of the general infection.

Fourteen cases, as has been seen, had early warning pain, earlier by a definite number of hours than the severe symptoms, and all these cases were found to be far advanced in general peritonitis at the time of operation. These early symptoms undoubtedly meant beginning peritoneal infection, as is shown by the after development, and the severe symptoms meant general septic peritonitis then existing. Whether these early symptoms meant a necrosed serosa without perforation, or a pin-point perforation protected or not protected by delicate ahesions, it is positive that general septic peritoneal infection started at a time coincident with these early symptoms and not coincident with these severe ones.

It must be admitted that these 14 cases had advanced general peritonitis at the time of operation; that they had signs and symptoms antedating the symptoms of peritonitis; that the severe symptoms in the cases of actual perforation differed in no way from the severe symptoms in the cases of general peritonitis from other causes of infection; and if this statement is true, then the diagnosis of these cases should have been made before these severe symptoms set in, and, therefore, a decision as to what symptoms are of importance in making a sufficiently early diagnosis of peritoneal infection in these cases is of the utmost necessity.

From a study of these cases and also of the cases reported by Cushing it would seem that complaints of abdominal pain in any typhoid case, especially if localized, and especially in cases of mild type, should be regarded as serious danger signals. We have already seen that in our sick and septic cases the condition of the patient may be such that moderate pain may not be noted, and that therefore a complaint of abdominal pain on the part of such a sick case may mean an established general peritonitis. (See Cases II and VI.)

In the mild cases of typhoid complaint of abdominal pain should lead to a strong suspicion of beginning peritoneal infection through a preperforative stage, or of a slow peritoneal infection through perforation, with or without temporary adhesions; or of a beginning infection from some other source than the intestine, as in Case XXI. This plan may vary in severity and locality. It is most frequent in the right iliac region, and is most often associated with

[15] Revue de Chirurgie, 1897, p. 169.

localized tenderness and spasm. To confirm the suspicion of beginning peritoneal infection a leucocytosis, steadily rising, during a few hourly counts, at least, should accompany this pain. Vomiting is rare. The temperature generally rises and the pulse also.

It cannot be too strongly emphasized that abdominal pain, especially if localized, complained of by the patient in the mild or moderately severe typhoids, is not a frequent occurrence unless it means peritoneal infection, localized or general. By pain we do not mean the discomfort or uneasiness accompanying meteorism or distention by gas.

We have made a study, bearing upon this point, of 70 cases of typhoid fever at the Massachusetts General Hospital occurring in the last two years, and have found, according to the records, that in the majority of cases of the mild and moderately severe typhoid no genuine abdominal pain whatever was complained of, even in the presence of distention, diarrhea and hemorrhage. Seventy cases: 20 severe typhoids and 50 mild; 7 cases died. In only 8 cases was any abdominal pain recorded as a complaint (11.4 per cent.), and 4 of these cases died (1 case with probable certain perforation or peritonitis, 1 of pneumonia, and 2 cases with suspicious symptoms of peritonitis). The other 4 cases had slight and transient abdominal pain, and recovered. Abdominal distention of more or less extent was noted in 10 cases, without any pain. Intestinal hemorrhages are noted in 8 cases, but pain accompanied these in only 1 case. Diarrhea is recorded as marked in 3 cases, but in only 1 was any pain, and in this slight.

With reference to this same point the records of the Boston City Hospital have been gone over for a year. Pain is recorded as complained of in 22 cases out of a total of 160 cases; of these 22 cases 5 are included among those operated on, which leaves 17 cases with pain, or about 10.6 per cent. of the total.

Localized muscular spasm and localized tenderness are diagnostic signs of the utmost importance associated with pain and leucocytosis.

The question as to whether the site of the perforation or the region of the beginning peritoneal infection materially affects the prognosis both of unoperated and operated cases is one that needs discussion. The fact that the appendix may be the seat of the typhoid perforation was first noted by Dr. R. H. Fitz, and the relation of this fact to the prognosis in cases of typhoid perforation was thus stated by him: "The probability of its occurrence (perforative appendicitis) furnishes the best solution to the prognosis of intestinal perforation in the latter disease (typhoid fever). Most cases of recovery from symptoms of perforation of the bowel in typhoid fever are those in which an attack of appendicitis is most closely simulated, while the fatal cases of perforation of the bowel in typhoid fever are, in the great majority of instances, those in which other parts of the bowel than the appendix are the seat of the perforation."

This set of cases does not furnish any case in which the perforation was appendicular. Fitz found this variety of perforation in 2 per cent. of 167 cases. In a series of cases operated upon — that is, our own set, 24; Cushing's, 8, and Finney's, 3; 35 in all — no instance occurs. Gairdner's[16] 47 cases included only one of *perforated appendix*. Perforation in the appendix can only have a more favorable prognosis because of its occurrence in a fixed portion of the bowel in a remote region where the chances of the peritoneal infection being shut up by protecting and life-saving adhesions prevail.

It is certainly misleading to state that most cases of recovery from symptoms of perforation are those in which an attack of appendicitis is closely simulated, because — as can be plainly seen from a study of our list of cases — many of them had beginning symptoms which suggested appendicitis, and yet the perforation was in the ileum, and the peritoneal infection became general and fatal. It is imperative that we should not be prevailed upon to wait operation in the hope that the perforation may be in the appendix, considering that the chance of localizing the infection by delay offers more hope to the patient than speedy operation, because the attack began with right iliac pain and tenderness and muscular spasm. The better teaching is that perforation of the appendix may occur in typhoid, although *rarely;* that when it does occur the infection may be localized, as in any cases of perforating appendicitis; but the great majority of cases of perforation of the bowel in typhoid fever may simulate an acute appendicitis.

A study of our whole list of 27 cases shows the following: Eleven cases had initial symptoms referred to the right iliac region, with one or more of the symptoms of localized pain, tenderness and spasm. Any one of these cases might have been suspected as the appendicular variety, and delay counselled because of the apparent localization of the signs; but 9 cases were perforations of the ileum, followed in all but 1 by general infection, and 2 had no cause for symptoms. In only 3 cases pain and tenderness, etc., were initial in the left iliac region. One was a case of general peritonitis from a suppurating gland, and the other 2 cases were very sick cases, in which the peritonitis had become extensive and general before any symptoms were noted. In 7 cases the pain and tenderness with rigidity were general. In 1 case locality of pain is not given. Therefore, we may conclude that the majority of cases of perforation have initial symptoms referred to the right iliac region; that in a very small percentage of all such cases is the perforation in the appendix; that general abdominal pain and symptoms, or symptoms and signs referred to the left side, point to the existence of a general peritonitis, the onset of which has been gradual and not definitely noted.

LEUCOCYTOSIS AS A DIAGNOSTIC SYMPTOM.

A careful comparative white blood count at frequent intervals in the presence of abdominal pain in typhoid may furnish the most valuable evidence of beginning peritoneal infection. A full and complete knowledge of leucocytosis in typhoid peritonitis has not been reached. Thayer, in 1892, first showed that in typhoid fever the white blood corpuscles are less than normal, or, in other words, that a condition of hypoleucocytosis exists, and that the smallest number of leucocytes is usually found at a period of time corresponding to the height of the fever. Cabot, in 1897, reiterated these facts and pointed out that a low leucocyte count in typhoid meant freedom from septic complications. Our study of 70 typhoid cases at the Massachusetts General Hospital is merely corroborative of the statements of Cabot and Thayer. The majority of cases at entrance had a hypoleucocytosis

[16] Glasgow Medical Journal, 1897, vol. xlvii.

of about 4,000; the lowest count in an uncomplicated case was 1,800. Septic complications, as phlebitis and otitis media, caused a leucocytosis. In nearly all the cases, however, only one white count — the one at entrance — is recorded; and even when this early count was high — over 9,000 — no other record is available. Certainly more frequent counts should be made in the future. The fact that leucocytosis in typhoid means inflammatory complications in the majority of instances, and that leucocytosis was present in peritoneal infection, was noted by Cabot (1897); and Finney, in his paper on "Typhoid Perforation" (1897), considered the most important symptoms of perforating typhoid ulcer to be "marked increase in the number of white blood corpuscles in association with continued abdominal pain." It does not appear that a full realization of the importance of a falling leucocyte count or the absence of leucocytosis in general peritoneal infection is held by a majority of medical men. Cabot stated that certain cases of general peritonitis would show no leucocytosis because of their being too sick to react against the infection.

Cushing, in his two papers on this subject, seems to have most carefully studied leucocytosis as a symptom, and his work strongly suggests that a white blood count, steadily rising from the first complaint of abdominal pain (which is confessedly the first warning of local or general infection), with certain fluctuations, reaches a maximum point, and then as steadily falls. This he aptly calls the wave of leucocytosis, and raises the question as to whether a falling count or an absence of leucocytosis (other symptoms being present) may not be diagnostic of a well-established general septic peritonitis. He considered it rational to suppose that the enormous migration of leucocytes to enter into the seropurulent exudation was a sufficient reason for the falling or deficient white blood count in general peritonitis. This point is a very important one to settle, for diagnostic reasons. Cushing's conclusions from a careful study of leucocytosis in his cases are here given:

"If this septic complication, namely, complication causing leucocytosis, is a peritonitis which remains localized, associated possibly with a preperforative stage of ulceration or with a circumscribed, slowly forming peritonitis after a perforation, it may be and usually is signalized by an increase of leucocytes in the peripheral circulation. If, however, a general septic peritonitis follows, the leucocytosis may be transitory and overlooked, as it disappears concomitantly with the great outpouring of leucocytes into the general peritoneal cavity.

"In order that the white blood count be of any diagnostic value whatever in the presence of abdominal symptoms it is essential that, for the purpose of comparison, previous counts have been made. An individual count at such a critical time may be misleading — in the first place, because a condition of hypoleucocytosis often is a characteristic of the fever, and a count comparatively within normal limits, of from 8,000 to 10,000, may actually represent a double increase in the number. Secondly, because by a single count the transient wave of leucocytosis may entirely escape notice.

"The flood-tide of this increase is a transient affair, lasting but a few hours in some cases, and may in consequence entirely escape observation, since there ordinarily is a following rapid diminution in number, corresponding to the spread of peritoneal infection. In some instances, when the process for the time remains localized, and in cases in which the preperforative stage exists, the leucocytosis may be of longer duration, the condition being analogous to that associated with acute appendicitis (typhoid or otherwise) before perforative peritonitis has occurred. Suppurative complications of typhoid, here or in other situations where they remain localized processes, have ordinarily a persisting leucocytosis, as is well known."

These conclusions of Cushing are reinforced by careful observations, and seem to give the best interpretation of leucocytosis in this class of cases. Whether absence of leucocytosis in the face of symptoms of peritonitis means well-advanced general peritonitis in every case has not been proven absolutely. Certainly one sure thing is that a single isolated blood count on the appearance of abdominal symptoms may be of little or no value. In one of Cushing's cases of perforation an hourly blood count showed that the white corpuscles rose in two hours from 4,800 to 10,400, and in an hour and a half later dropped to 7,000. In another of Cushing's cases of intestinal perforation a drop of 20,000 in three hours after the probable time of perforation is noted. The appearance of leucocytosis in the presence of abdominal pain may, however, be misleading as a diagnostic symptom of peritoneal infection.

As is well known, the existence of a septic focus, an abscess, or a septic phlebitis elsewhere might furnish cause for the leucocytosis coincident with abdominal symptoms. One or more cases have been reported in which the symptoms of peritoneal infection, including leucocytosis, led to an exploratory laparotomy, with negative findings. Cushing has had such a case. Case XXIII in our series is also such a one. Finney has been led to an exploratory laparotomy in which the symptoms suggesting intestinal perforation, including a leucocytosis, were probably due to an iliac thrombophlebitis. This case recovered. It has been found by Cushing that a post-operative leucocytosis occurs after all abdominal operations.

With these facts and theories in mind as representing the latest opinions in regard to leucocytosis as a symptom, reference to our series of cases with a view to find corroboration of these facts furnishes very little of value because of the lack of comparative counts. In almost all of the cases only one blood-count was made.

To take our cases in detail, the leucocyte count is only recorded in 11 cases of the 21 in which perforation or peritonitis was found. In the first set of cases, namely, those without warning symptoms, the leucocyte count is recorded in 4 cases. In Case IV (the case of perforation protected by local adhesions) a leucocytosis of 14,300 was found at an unknown number of hours after the onset of abdominal symptoms. No other count is recorded. In Case V one count at the onset of symptoms showed 6,000; no other count. Case VI showed a leucocytosis of 13,200. This case was one in which perforation and localized abscess formation took place without any diagnostic symptoms at a time probably remotely preceding the severe symptoms which demanded operation. Occasional comparative leucocyte counts as a matter of medical routine might have led to the suspicion of a septic complication. Case VII showed a white count of 8,600 at the onset

of the symptoms; no other count is recorded. The other 3 cases of our first set have no record of any leucocyte count.

Taking our second set of cases, namely the 14 in which premonitory symptoms existed, as we have seen, it would have been of the *greatest importance diagnostically* to have known what the white blood count had been for several days before the symptoms, and also to have known what the white blood count at early intervals after the occurrence of abdominal pain was; yet in only 2 cases was there any leucocyte count taken at this time, and then only one isolated count in each case is recorded.

Case XVI had a white blood count of 6,900 two days before he complained of abdominal pain; at the first complaint of pain a count of 8,000. Then no further leucocyte count was taken for twenty-four hours; but when severe symptoms (which meant general peritonitis) set in a white count equalled 17,200. Certainly in this case frequent and comparative blood counts might have contributed much to our knowledge of a rising and falling count. Case XV, seen after the warning complaint of pain, had a white blood count of 31,000. Twenty-four hours after, when general peritonitis had set in, the white count had dropped to 23,000 and 17,000. Only these three counts are recorded.

It is much to be regretted that in this series of cases in which 14 had premonitory symptoms, such slight knowledge in regard to the diagnostic value of the white blood count is available. In Case XIV the blood count at the time of the first abdominal symptoms showed 10,000 whites, but no other count was taken. Six cases of the 14 record no blood count at the occurrence of either mild or severe symptoms In 6 cases the only blood count was made when severe symptoms appeared. In Case XII, a case of extensive peritonitis at operation, the white cells were 3,800. In Case XIII, also a case of extensive peritonitis, the white cells were 5,400. In Case VIII, also a case of general peritonitis, the white cells were 7,300. In Case II they were 8,000 just before operation.

Here are 4 cases in which an isolated blood count, taken when peritonitis had become general, showed no leucocytosis. Whether a previous leucocytosis had existed, and whether the absence of leucocytosis in the presence of general peritonitis is a diagnostic sign, cannot be determined because of the absence of comparative counts in all of these cases.

Case IX had a leucocytosis of 16,000 after general peritonitis was evident. Ten days before the count was 14,000. No interval counts are recorded.

Case X had a white count of 14,000 with the symptoms of general peritonitis. At entrance to the hospital, ten days before, his white count was 6,500. No other counts are noted.

It is not possible to establish anything new and valuable in regard to leucocytosis as a symptom from the study of these cases, because of the lack of sufficient data. The one conclusion is that the leucocyte counts in typhoid cases should be sufficiently frequent to be of comparative value; that any complaint of abdominal pain or the appearance of abdominal symptoms demand frequent counts.

The question of diagnosis and the relative value of abdominal symptoms and leucocytosis as deciding for operation is illustrated in a negative way in Cases XXII, XXIII and XXIV. Cases XXII and XXIII were mild or moderately severe typhoids, practically convalescent in the fourth and sixth weeks of the disease. Case XXII had no leucocyte count, and it seems questionable whether it would be justifiable to operate upon a case with such abdominal symptoms without the corroborative evidence of a leucocyte count. It has been done, however, in other cases (the case reported by Herrington and Bowlby [17]). Case XXIII had practically the same abdominal signs and symptoms as Case XXII, except that there is no record of the temperature at this time, which in Case XXII was rising from a normal curve, and Case XXIII had also a leucocytosis of 12,000 one hour before the operation. While this leucocytosis is not large, the white count had risen from 9,000 twelve hours before the operation. Neither of these 2 cases seems to have been very sick or to have had any great amount of shock. Case XXIV seems to have been a case of typhoid septicemia, in which no certain cause for the abdominal symptoms was found. No leucocyte count and no bacteriological cultures are recorded in this case. Probably he died from typhoid fever, although the presence of a green, necrotic fibrin patch found on a loop of the intestines at the operation leaves room for the thought that the abdominal symptoms and death may have been caused by a virulent peritoneal infection.

RESULTS.

Of the 21 cases in which the local or general peritoneal infection was found at operation 3 cases recovered absolutely — that is, 14.3 per cent. recovered. In Case IV — a case of operation in the pre-extravasation stage — it is noted by Dr. F. S. Watson that the protecting adhesions were very slight and delicate, and that in Dr. Watson's opinion they would not have long resisted fecal extravasation.

The 2 other cases which completely recovered are Cases XVI and XVII, both cases of general septic peritonitis. Together with Abbe's [18] case they prove that it is not impossible to save cases of general peritonitis in typhoid fever. The bacterial infection, however, in both of these cases, as well as in the case of Abbe's, was not determined.

Case I properly should be classed as a recovery from an operation for intestinal perforation in typhoid, for death occurred from intestinal hemorrhage five days after the operation, and the autopsy showed the suture tight and no general peritonitis. If this case can be classed as a recovery, we have four recoveries from operation from acute peritoneal infection in typhoid, or 19 per cent.

Case IX cannot be considered as recovering, but it is a case of death caused by giving way of the intestinal sutures put in at the first operation.

Taking our 24 cases of typhoid fever which were operated on, 21 with abdominal infection and 3 with no infection found at operation, we have 6 cases of recovery from laparotomy in typhoid fever, or 25 per cent.

Cases XXII and XXIII are noteworthy as showing that the mere abdominal operation in a slight or moderately severe typhoid is not a very fatal thing when no peritoneal infection is present. Case XXIII was also not a very favorable subject for any opera-

[17] Medico-Chirurgical Transactions, London, vol. lxxx, p. 127.
[18] Medical Record, 1895, vol. xlvii, p. 1.

tion, because of cardiac and renal complications, yet both these cases made uneventful recoveries from the operation. In Case XXII an appendectomy was done for an old chronic process in the appendix. In Case XXIII the operation was simply exploratory. Two of Cushing's reported cases further show that an exploratory laparotomy or a simple appendectomy in a mild or moderate typhoid is usually well borne. We have seen that the 5 cases (Cases I, III, IV, V and VII) were especially favorable cases for operation. Three of these died, and they were all cases that could have stood laparotomy just as well as Case XXII or Case XXIII had it not been for the peritoneal infection, the nature of which was undetermined in 2 cases and found to be the bacillus typhosus in 1. These 3 fatal favorable cases point to the fact that a fatal peritonitis may set in within from one to two hours after perforation. Of these 3 cases Case III died on the third day, Case V on the fourth day and Case VII on the second day.

Of the 14 cases in our second set, in all of which operation found more or less extensive peritonitis, and in regard to which it may be said that the operation was directed against the peritonitis primarily, 12 died; 1 lived eight days and died from secondary extravasation. All the others died within fifty hours after the operation; 2 within six hours, 7 within thirty-six hours, and 1 on the operating-table.

If we grant, for the sake of argument, that the sick typhoids, 6 in number, might have died from their typhoidal condition complicated by an abdominal operation, even if peritonitis had not been present, we still have 8 mild cases in which the cause of death was probably a peritoneal infection, and not the operation itself.

Calculating statistics of the operative treatment of general peritonitis from any cause is foolish business. The chances for success in such treatment depend on so many factors: the amount and virulence of the infection, the condition and resisting powers of the patient, the differing operative technique of different men, the time of operation, the kind and amount of anesthetic used, etc. In trying to find out why some of these cases lived and some died it would be well to take only the 15 mild cases, throwing out for the time being the 6 severely sick typhoids as doubtful cases for standing the shock of the abdominal operation, leaving ourselves 15 mild typhoids for consideration. Of these, 5 had perforation without any warning symptoms, and were operated upon very speedily thereafter; 2 recovered, 1 because the operation was done in the pre-extravasation stage — a rare event; 3 died from peritoneal infection from the intestinal extravasation, although no macroscopical signs — or, at most, slight signs — of general peritonitis were present at the operation. Ten of these mild cases had general septic peritonitis at the time of operation; 2 recovered.

When we consider the reasons for the recovery of 2 of these cases and the death of 8 we are brought face to face again with insufficient recorded data. The time of operation is recorded in only 3 of the fatal cases: 1 case, thirty minutes; 1 case, thirty-five minutes; 1 case, one and a half hours.

The time of operation in the cases that recovered is not noted. The kind of bacterial infection in the cases that recovered is unknown. In 1 case that died it was an infection of bacillus typhosus; in 1 case infection of the colon bacillus and other doubtful bacteria.

Ether was the anesthetic in every case; but the amount given, and the time the patient was kept under it, and the effect on the pulse are in no case recorded.

Cushing has enthusiastically endorsed the use of cocaine anesthesia in exploratory laparotomies in acute abdominal infection in typhoid. He has not, however, proved in his article that the majority of his cases were any better off than the cases operated upon under ether. It is not the feeling of this Committee that operation under cocaine anesthesia is advisable in cases of mild typhoid whose general condition of mind and body is fairly good, because rationally the shock to the mental and physical organism from an abdominal operation, with all its attendant manipulation, to a conscious patient must be greater than the judicious administration of ether. In certain cases of advanced peritonitis in which the patient is sick or nearly moribund, stupid and unintelligent, the use of local anesthesia may be advantageous.

Irrigation of the peritoneal cavity with hot salt solution or hot sterile water was practised in every case of general peritonitis but 1, namely, Case XVI. In this case careful wiping out of the cavity with gauze was done. Drainage with gauze or with tube and gauze was used in every case but 2, both of which died. It does not appear from available data that these variations in technique affected the result. The surgical opinion is practically unanimous the world over, that the operation for septic peritonitis must include free incisions, careful cleaning of the abdominal cavity by wiping, irrigation and free drainage.

It is impossible to work out by percentages the chances of recovery in cases of intestinal perforation and peritoneal infection in typhoid fever. It is a question of peritoneal infection (kind, amount and virulence), together with the condition and resisting powers of the patient, who has already contended with another disease. It is not the mere fact of operating in these cases that kills them, and it cannot be said that the typhoidal condition forbids an operation. It has been shown that a majority of the cases of perforation and infection are mild typhoids, and it has also been shown that abdominal operation in the absence of infection is not necessarily fatal, but, on the contrary, is well borne. The peritoneal infection is the thing that kills in the majority of cases.

A peritonitis from a perforation of the intestine in typhoid may be caused by virulent or non-virulent organisms just as in any other perforation of the bowel. Most of the typhoid perforations operated upon in this series of cases and all cases hitherto published have had a general peritonitis that would kill a majority of the men who had contracted it from other causes than typhoid, namely, perforated appendix or wounds. General peritonitis of the intestinal variety in a strong man, without typhoid fever, is a very fatal affair, and the chances of a recovery from operation in any case cannot be established by statistics except in a general way.

CONCLUSIONS.

This series, unfortunately, leaves much to be desired in the way of accurate and carefully reported study of many of the cases in the light of the most recent experience; but from the foregoing analysis of the material we can definitely conclude that:

(1) In many very sick typhoids perforation or

peritoneal infection cannot be diagnosed until the results are already widespread and of fatal extent The chances of a fatal issue from an abdominal operation in such cases are overwhelming.

(2) In mild typhoids of fair general condition an abdominal operation is readily borne, provided no peritoneal infection is present.

(3) A small number of mild typhoids may have sudden perforation with free extravasation. In these the symptoms are fulminant, but localized to a great extent, and in these

(4) Operation must be done at once, for general infection may become past relief in from one to five hours, and walling off of the perforation by protecting adhesions is so rare as not to be counted upon.

(5) In the majority of mild cases, beginning infection (whether from perforation or not) is marked by comparatively slight symptoms — local pain, tenderness, spasm and leucocytosis. The severe following symptoms mean general peritonitis.

(6) These warning symptoms demand serious consideration and study, but in many cases are either not rightly understood or not acted upon.

(7) Complaint of abdominal pain in a case of typhoid should always lead to a suspicion of beginning peritoneal infection.

(8) Frequent leucocyte counts are needed in every case of typhoid. In the presence of abdominal pain an hourly count is necessary.

(9) Pain associated with local tenderness and muscular spasm and a rising white blood count points in most cases to an operation ; in all cases to a surgical consultation.

(10) In not a few of this series of cases operation was imperative a varying number of hours before it was done.

If it can be appreciated that the severe symptoms more often mean general peritonitis, it must be understood that the milder and earlier symptoms are the important ones.

REPORT OF CASES.

CASE I. Seeley, male, age thirty-two years, white. Drs. Bowditch and Thorndike, Boston City Hospital, September, 1899. Sudden perforation. Operation within three hours from first symptoms. No general peritonitis. Death five days after from intestinal hemorrhage. Uneventful until the sudden abdominal symptoms. Mild course. Widal positive. Diazo (?). No complications. No abdominal complaints. Not a sick man. End of sixth week, forty-second day, operation. Ether. Time not known. Incision, right iliac. Irrigation. Gauze drainage. Sudden intense abdominal pain, not localized. Marked shock. Pulse 150. Temperature 102.6°. No leucocyte count recorded. No fall of temperature. No vomiting. Operation three hours after. No general peritonitis. Intestinal contents in abdominal cavity; fluid fecal matter. Perforation in ileum, two feet from cecum. Closed with silk. No cultures. Excellent result for five days. Operation for the perforation successful. Five days after, excessive intestinal hemorrhage causing death. The autopsy showed that the operation was a success. No general peritonitis. The suture was intact and protected by adherent intestines with slight local peritonitis, from which the colon bacillus and staphylococcus albus were grown. Cultures from rest of abdominal cavity negative.

CASE II. Bowler, male, age twenty-five years, negro. Drs. G. B. Shattuck and F. B. Lund. Boston City Hospital, October, 1899. A case of general septic peritonitis from necrosed patches of peritoneum, *without perforation. Symptoms of perforation, however.* Moribund at operation. Death. Severe course. Widal positive. Diazo (?). Abdominal pain constant. Fourth week, twenty-second day. Operation. Ether. Time (?). Incision, right iliac. Irrigation and drainage. Very sick case. Temperature high. Delirious. Abdominal pain and tympanites at frequent intervals. Two intestinal hemorrhages before operation (two days before). Sudden chill, shock, collapse, rising temperature and pulse. Distention. No vomiting. Operated on seven hours after, when in moribund condition. No leucocyte count. No perforation. Two necrosed patches in wall of ileum over ulcers. General peritonitis. No cultures made. Gas and serous fluid escaped. Intestines clean and not injected. Several necrotic areas. Necrosed places, inverted with silk. Death in eighteen hours. Cause, peritoneal infection and typhoidal state. Compare this case to Case XVI. This case had sudden severe symptoms from peritonitis without perforation. An unfavorable case from all points of view. Peritoneal infection from necrosed patches, probably virulent, whereas in Scappacci's case infection from necrosed patches probably non-purulent, with the abdominal pain and distention marked. Specially associated with hemorrhages. Careful white blood count at frequent intervals might have been suggestive.

CASE III. McCann, male, age thirty years, white. Dr. F. C. Shattuck and Dr. Warren. Massachusetts General Hospital, January, 1899. Sudden perforation without warning. Operation within two hours. Death in three days. Mild course. Widal positive. Diazo positive. Bronchitis. No abdominal complaints. Fifth week, thirtieth day, incision, right iliac. Irrigation. Drainage, gauze. Ether. Time of operation (?). Mild fever complicated by hemorrhagic bronchitis. Intestinal hemorrhage two days before perforation. No warning. Patient comfortable, when sudden sharp pain in right iliac region with great tenderness and muscular spasm. No white count at this time. White count two days before 3,800. White count at entrance, ten days earlier, 10,000. No vomiting. Temperature subnormal, but began soon to rise. Pulse below 100. Operation one and a half hours after. Perforation in ileum, site not mentioned. No general peritonitis. Some free fluid. No bacteriology. Death on third day, in sixty hours, with symptoms of general peritonitis. No autopsy.

CASE IV. Scott, male, age twenty-eight years, white. Drs. Withington and Watson. August and September, 1895. Perforation. Localized peritonitis. Operation in pre-extravasation stage. Recovery. Mild course. No Widal test made. Diazo positive. Rose spots. Eleventh week in a relapse. Operation. Ether. Time (?). Incision right iliac over induration. No irrigation. No drainage. Long course, one or two relapses. No special complications. Twenty-three days before perforation, two or three hemorrhages. No abdominal pain recorded, but some tympanites. Without warning sudden severe pain in right iliac region at 2 A. M. Temperature did not fall, but rose. Pain steadily worse. Pulse rapid and weak. Some cyanosis and prostration. Muscle spasm on right side of abdomen. Dulness and indurated feeling to right of umbilicus, "size of hand." No distention. No vomiting. "The symptoms of local pain and rigidity increased while patient's general condition improved." Leucocytosis 14,350. Operation twelve hours after first pain. A loop of ileum adherent to parietal peritoneum around a perforation size of a dime; well-defined area of local peritonitis. Limiting adhesions delicate. "Every probability that these adhesions would not have resisted fecal extravasation long and that a general peritonitis would have resulted if case was left to itself." (Watson.) Perforation closed. Recovery uneventful. No cultures.

CASE V. Dolan, female, age twenty-five years, white. Drs. George B. Shattuck and Lund. Boston City Hospital, November, 1899. Perforation. Beginning general infection with typhoid bacillus. No definite warning symptoms. Death. Mild course. Widal positive. No complications. No abdominal complaints. In second week, twelfth day. Operation. Ether. Time, thirty min-

utes. Incision, median. Irrigation. Drainage. Uneventful till twenty-six hours before operation, then hard chill (no other record at this time). Next A. M. (twelve hours after) several chills. Twenty-two hours after first chill and four hours before operation abdominal pain above pubes. Tenderness and spasm (more on right). Temperature fell to 98°, but rose at once. No distention. Pulse 120. No vomiting. Nausea. Leucocyte count, recorded as taken when pain complained of, 6,000. No other count. Perforation eight inches from cecum in ileum. Gas and turbid fluid in general abdominal cavity. General peritonitis not far advanced. Infection, pure typhoid bacillus. Perforation closed with silk, also two thin places enfolded. Death on fourth day, with symptoms of general peritonitis. Perforated coil of intestine was lying low down in pelvis. (Note locality of pain above pubes.) Perforation probably when pain was first noted. Operation reasonably soon. Typhoid infection, probably a virulent one. The general peritonitis was not far advanced at operation, yet was undeniably a general infection.

Case VI. Devlin, male, age twenty-four years, white. Drs. F. H. Williams and Munro. Boston City Hospital, November, 1899. Perforation and local abscess formation, with no diagnostic symptoms, followed by general peritonitis with severe symptoms. Death. Severe course. Widal negative. Rose spots. Large spleen. No complications. In fourth week, twenty-sixth day, operation. Ether. Time (?). Incision, right iliac. Irrigation. Drainage. Case stupid and sick. Fever high. No abdominal complaints till special ones. Two severe intestinal hemorrhages on day before in A. M. and P. M., accompanied by hard chill and collapse. Very near death at this time. Unconscious twenty-four hours after this. Abdominal pain. Tenderness, mainly right iliac. Distention. Rigidity. No vomiting. Leucocytes 13,200. Temperature (?). Operation twenty-eight hours after hemorrhage. Operation four hours after pain, etc. General peritonitis with cloudy fluid; pus and feces in left pelvis free. In right iliac region an abscess cavity walled off by fairly strong adhesions, filled with pus, blood and feces; large ragged hole in ileum near cecum. No cultures recorded. Perforation closed. Death in forty-eight hours from general peritonitis. No autopsy. This case was one of perforation and forming of a walled-off abscess with no symptoms complained of by a very stupid, sick man. Time of extension to a general peritoneal infection doubtful. No cultures from general peritoneal fluid, as well as from local abscess, were taken.

Case VII. Marchiono, male, age thirty years, white. Drs. Henry Jackson and Munro. Boston City Hospital, July, 1898. Perforation. Sudden onset. Peritoneal infection not known. Quick operation. Death. Mild case. Widal positive. Diazo (?). No complications. No abdominal complaints. In third week, twentieth day, operation. Ether. Time, one-half hour. Incision, right iliac. Irrigation. Drainage. Ten A. M. pain complained of in abdomen, with no special tenderness, nothing localized. No spasm. Leucocyte count then 8,640, not taken again (?); 1.30 P. M. severe pain and chill, collapse. Abdomen everywhere tender and rigid, but especially on right side. Fall of temperature recorded to 98°, rising soon to 105°. No vomiting. Operation eight hours after first pain, five hours after collapse. One perforation in ileum ten inches from cecum. No free fluid. "No extensive signs of peritonitis." Perforation closed. No cultures recorded. Death in forty-eight hours without symptoms of peritonitis. Partial autopsy through wound. Slight microscopic signs of general peritonitis, but no bacteriology. Cause of death (?). Infection not known. In this case quick operation after first symptoms. Beginning peritonitis.

Case VIII. Schick, male, age sixteen years, white. Dr. Gannett and Dr. Mixter. Massachusetts General Hospital, August, 1897. Case of perforation. Symptoms of peritonitis. Perforation probably took place some hours before first symptoms. Death. Severe course. Widal positive. Diazo positive. End of third week, twenty-first day, operation. Ether. Time (?). Incision, median. Irrigation. Drainage, gauze. Albumin, a trace in urine. Mitral regurgitation. Compensated. White count on entrance 4,000. High temperature and great abdominal distention all the time in the hospital, but no pain till August 20th (the day before severe symptoms) — that is, twenty hours before operation sharp pain in the left iliac region. No white count. Temperature falling gradually to 99.4° the following evening. No record of close watch of case. Next A. M. severe symptoms. Very great pain. Great distention, "board-like abdomen, most tenderness left iliac," bad pulse, anxious facies, no vomiting. White count 7,300. Perforation eight inches from cecum in ileum. Virulent general peritonitis, pus and feces. Intestines covered with fibrin. No cultures. "Peritonitis of longer standing than twenty hours." Death in fifty hours. Peritonitis, spreading from a local area of infection or from perforation which took place without being noted. Small leucocyte count, possibly due to extensive purulent peritonitis. No comparative counts except one at entrance.

Case IX. Hanahan, male, age twenty-seven years, white. Drs. Fitz and Beach. Massachusetts General Hospital, November, 1897. Perforation. General peritonitis. Operation. "Second perforation" or giving way of sutured area eight days after second operation. Death. Mild course. Widal positive. Diazo positive. First of third week, operation. Ether. Time, thirty minutes. Incision, median. Irrigation. No drainage. Slight bronchitis. Trace of albumin and hyaline and granular casts in the urine. Nothing pointing to the abdomen save a little distention. No intestinal hemorrhages till after the first operation. December 6th, distention and tenderness to the right of the umbilicus. Temperature rising, pulse steady, no white count then. Leucocytosis at entrance, November 27th, 14,100; November 29th, 14,200; December 8th, 16,000. December 7th, tenderness increasing and temperature rising. No white count. December 8th, gradually falling temperature and great increase in tenderness and distention of abdomen. Liver dulness obliterated. White count 16,000. General tenderness, pulse 130, temperature 104°. No vomiting. No complaint of pain. Operation next day (December 9th), about sixty hours after first warnings and after twenty-four hours after symptoms of general peritonitis. The infection was a slowly spreading one; the severe symptoms on December 8th were probably due to the general peritonitis. The condition on December 6th and 7th strongly suggests a pre-extravasation stage, but comparative blood counts are not recorded. Operation would certainly would have been justified by these symptoms of peritonitis fully fifteen hours before it was actually performed. Perforation one-eighth inch in diameter, one inch from cecum in ileum (Beach). Closed. Foul gas and fecal fluid in belly. Yellow fibrin on intestines. No bacteriology. Did well after operation save for the continuation of typhoid temperature, averaging 102°, and three or four moderate intestinal hemorrhages. Some distention. Eight days after first operation pain all over belly, followed in three hours by collapse. Second operation found large necrotic area and ragged hole in the cecum which was, for a great space around ulcer, soft and gangrenous — "shows patches of necrosis." Peritoneal cavity contained much dark fluid, feces and blood. Died five hours after. Autopsy: Much foul fluid in the peritoneal cavity. Many ulcers in last three feet of ileum and in ascending colon. In cecum large necrotic areas, two small perforations, and two ragged large openings. In ileum no ulcer through to peritoneal coat, and no sutures found. Although this case has been considered a case of second perforation after recovery from the first perforation, the facts do not permit this view of it. The first perforation was said to be one inch from the cecum; the second operation and the autopsy found great necrotic softening and ragged holes in the cecum, and the autopsy found no ulcers in the ileum which were through to the peritoneal coat, and no trace of the silk sutures. The localities are practically coincident. It seems just to add that the case did well after the first operation until the

extensive necrotic changes in the cecum involving the sutured area caused giving way of sutures and second extravasation. Certainly eight days is too short a time in which a sutured ulcer could heal and vanish, and the silk sutures would not have disappeared.

CASE X. Hoyt, male, age nineteen years, white. Drs. F. C. Shattuck and C. B. Porter. Massachusetts General Hospital, October, 1896. Perforation. General peritonitis. No full study of early and warning symptoms recorded. Death. Mild course. No Widal test made. Diazo. No complications. No abdominal complaints. Thirteenth day, last of second week, operation. Ether. Time (?). Incision, median. No irrigation. Wiping. Gauze drains. No hemorrhages. Uneventful till October 26th. Pain in abdomen growing steadily worse. No collapse, no fall in temperature then. Pain steadily increasing. Legs drawn up. No records of any examination for spasm, etc., but records of morphine given. No white count. Eight hours after pain first noted symptoms of general peritonitis. Pulse 112, sweating, temperature down somewhat, pinched face, belly rigid, tenderness general. Liver dulness not obscured. No vomiting. White count 14,700. Operation eleven hours after first symptoms. Perforation in ileum "near cecum." This is called in record "a sloughing area from which gas was escaping, but no fecal matter." General peritonitis, seroturbid fluid of fecal odor. No bacteriology. Perforation infolded with two rows of sutures. Death in thirty-six hours after great distention with obstinate vomiting. The autopsy raises a speculation as to the cause of death — whether due to obstruction from too much infolding of intestines by the two rows of sutures. The lumen of intestine at the point of suture admitted the little finger-tip, but was obstructed by a hard, impacted mass of feces. Whites at entrance 6500. Eight hours after first pain 14,700.

CASE XI. Bresnahan, female, age forty years, white. Dr. C. A. Porter and Dr. Thompson. St. Elizabeth's Hospital, August, 1899. Perforation. Definite early symptoms, which were not considered important. Operation six hours after severe symptoms. Death. Mild type and course. No Widal test made. No diazo. Rose spots, etc. No complications. No abdominal complaints. In third week, operation. Ether. Thirty-five minutes. Incision, right. No second incision. Irrigation. Drained with gauze. Uneventful case. No intestinal hemorrhages. Twenty hours before operation, pain in abdomen with some tenderness. No white count. No examination through the day. Six and one-half hours before operation pain severe, pulse 135. Three and one-half hours before operation — that is, sixteen and one-half hours after first complaint of pain — symptoms of collapse (general peritonitis). Temperature 106°. Muscle spasm and tenderness in right iliac region. No vomiting. Leucocytes 8,000. One perforation six inches from cecum in ileum. V-shaped resection, silk sutures, one thin place inverted. General peritonitis. Free fluid of fecal odor. Injected intestines, with fibrin flakes. No cultures taken. Infection unknown. Death thirty-seven hours after. Partial autopsy through wound. Existence of other perforations unknown. Cause of death, peritoneal infection. Beginning infection probably when first pain, twenty hours before operation. No importance attached to early symptoms. Severe symptoms due to general peritoneal infection.

CASE XII. McDonald, female, age twenty-six years, white. Drs. Buckingham and Munro. Boston City Hospital, September, 1899. Case of perforation with excessive general peritonitis. Perforation and peritonitis much earlier than diagnosed. No symptoms save of general peritonitis. Death. Severe course. Widal positive. Diazo (?). No complications. No abdominal complaint. First of fifth week, thirtieth day, operation. Ether. Time of operation (?). Incision (?). Entered the Boston City Hospital in the fourth week. Two intestinal hemorrhages five days before "perforation." After these very sick, stupid. Pulse and temperature high. Some abdominal distention. No abdominal pain until the morning of September 18th, then pain and tenderness, requiring morphine. Four hours after this great distention, general tenderness, chill, collapse, poor pulse, temperature fell to normal, but began at once to rise. No vomiting. Leucocytes 3,800 (note, general peritonitis with excess of fluid). No other count recorded, and no time of this given. Operation six hours after pain, two after collapse. Case "moribund" at operation. Perforation site not recorded. "Excessive general peritonitis, evidently of long standing; appearance of intestines and abdominal cavity showed general peritonitis of much longer standing than six hours" (Munro). No bacteriology. Death on operating table. No post-mortem. This case was "stupid" and sick, and illustrates that perforation and general peritonitis may be gradual, and in a sick and stupid patient unnoticed until extreme septic infection.

CASE XIII. Starnar, male, age twenty-five years, white. Drs. Gannett and C. B. Porter. Massachusetts General Hospital, October, 1899. Perforation gradual. General peritonitis of long duration. No very definite diagnostic symptoms. Death in two hours. Mild case. Widal positive. Diazo positive. No complications. First of fourth week or end of third, operation. Ether. Time, one and one-half hours. Incision, median. Irrigation. No drainage. In the hospital ten days before operation. Abdomen distended most of the time, but no pain. Patient dull and stupid. Temperature high, pulse good. Four A. M. intense pain, abdominal distention. No examination. Eight A. M., September 13th, sudden vomiting. No pain complained of, but abdomen much distended and knees drawn up, face anxious, general rigidity, abdominal and general tenderness. No fall of temperature recorded. White count, 8.30 A. M., 5,400; 10 A. M., 4,400; 2 P. M., 6,300. Operation twelve hours after first pain. General peritonitis, cloudy fluid, gas in large amounts. Intestines much injected, distended, covered with fibrin. Perforation just above ileocecal valve in ileum, "pin-head," closed. No culture. "Condition on leaving table very bad." Death in two hours. No autopsy.

CASE XIV. McKenna, male, age thirty-eight years, white. Drs. George B. Shattuck and F. B. Lund. Boston City Hospital, December, 1898. Perforation. General peritonitis. Definite warning symptoms. Death. Severe course. Widal positive. Diazo (?). No complications. No abdominal complaints. End of third week, twenty-first day. Ether. Time (?). First incision in right iliac, second in left. Irrigation. Drainage, gauze and tubes. Seven P. M. of the day before operation general abdominal pain, also pain in rectum and bladder. General abdominal tenderness and rigidity. No change in pulse and temperature. Leucocyte count 10,000. Query as to why this was not repeated. No record of any observation of case till next day. The next morning (twelve hours after warning) symptoms of peritonitis recorded, namely, distention, anxious facies, vomiting, no fall of temperature, pulse rising to 120. Operation fifteen hours after first symptom. Perforation in ileum one foot from cecum. Closed. Seropurulent general peritonitis, pus and feces, fibrin. Infection, colon bacillus and other bacteria. Death in forty-two hours. Autopsy showed general peritonitis. No other perforations. Beginning of infection when first pain, fifteen hours before operation. Definite warning. No record of case for twelve hours. Leucocyte count day before, when suggestive symptoms appeared.

CASE XV. Mahr, male, age thirty years, white. Drs. Bowditch and Watson. Boston City Hospital, February, 1898. Perforations. General peritonitis. Early symptoms definite. Operation delayed forty-eight hours. Death. Mild course. No Widal. No diazo. Post-mortem proof. End of third week, operation. Ether. Time (?). Incision, median, and two counter incisions in flanks. Irrigation. Drainage tubes and gauze. No special complications. Temperature normal for two days. No abdominal complaints till last. September 15th, A. M., vomited and complained of sudden pain, first in epigastrium, then all over abdomen and shooting into testicle. Tenderness in abdomen general but most marked in right lower region and in epigastrium. "Shock not marked." Temperature

rose from normal to 102°. Pulse 150. In a few hours rigidity of abdomen and tympanites. Leucocytes on September 15th, 31,550; next day, 17,000 to 23,000 (September 16th). In spite of these marked warning symptoms no operation for forty-eight hours. Then symptoms of fatal peritonitis, case nearly moribund, temperature subnormal, cold extremities, marked prostration, cyanosis, marked distention and rigidity. Operation found perforation in ileum near cecum, size of "split pea." Found general peritonitis, pus, fecal fluid, dirty-gray lymph, coils adherent, pelvis full of turbid fluid, perforated coil fastened in abdominal wound. Infection, colon bacillus and great variety of other bacteria (?). Death in six hours. Autopsy: Numerous typhoid ulcers in lower ileum. A second perforation (pin-point) close to valve. General peritonitis. A repeated white count in this might have contributed much to the knowledge of a falling count in peritonitis.

CASE XVI. Scappacci, male, age nineteen years, white. Drs. Cutler and Elliot. Massachusetts General Hospital, June, 1899. General peritoneal infection from a necrosed and gangrenous patch over an ulcer. Threatened perforation. Definite warning symptoms of infection. Recovered. Mild course. Widal positive. No complications. No abdominal complaints. Last of second week, operation. Ether. Time (?). Incision, median. No irrigation, but wiping. Gauze drainage. Uneventful till June 4th, then pain in lower abdomen with general tenderness. Leucocytes June 2d, 6,900; June 4th, 8,000. No complaints or examination recorded for June 5th. June 6th, severe pain, abdomen tender and rigid, but more on right side; tympany, anxious facies, pulse 120, fall of temperature. Leucocytes 12,200. No vomiting. Operation two days after first abdominal pain. Four hours after, symptoms severe. Four feet from cecum a necrotic patch of peritoneum, the base of intestinal ulcer. General peritonitis, seroturbid, purulent fluid and fibrin flakes. Intestines injected, with green fibrin patches occasional. No cultures. Patch inverted. Recovery after relapse of typhoid. Infection not determined. A case of perineal infection from ulcer not yet perforated. Symptoms of perforation all present. Infection probably non-virulent (?). Compare Case XXI.

CASE XVII. Bloom, male, age forty-five years, white. Dr. Brooks. Massachusetts General Hospital, September, 1898. Extensive general peritonitis from perforation in walking typhoid. Infection not determined. Recovery. Widal positive. Ambulatory case. In second week, operation. Ether. Time (?). Incision, right iliac. Irrigation. Drainage, gauze. Case of typhoid as shown by Widal and by finding of typical ulcer indurations in ileum. Had been sick for a week or ten days, with pains in abdomen. Up and about out of bed most of time (walking typhoid). Brought to accident-room 3 A. M. in bad condition. Temperature 103.4°, pulse 134, respiration 60. History of pain in region of appendix, severe for two days, with nausea. Operation found brown, purulent fluid in general peritoneal cavity, with no odor; portions of small intestine covered with hemorrhagic spots, "size head of tack." Perforation found one foot from cecum. "Indurated area, size of quarter, in centre of which pin-point opening." The appendix removed, incidentally, for old thickening. No active process in it. Perforation took place two days at least (?) before entrance. No white count. Recovered. No return of typhoid state, though Widal positive after operation. Discharged, well, in six weeks. No bacteriology.

CASE XVIII. McCarron, male, age thirty years, white. Drs. Bowditch and Thorndike. Boston City Hospital, October, 1899. Perforation. Beginning general peritonitis. Operation eight hours after first symptoms. Death. Mild course. Widal positive. Diazo (?). No abdominal complaints. In the fifth week, thirty-third day, operation. Ether. Time (?). Incision, right iliac. Irrigation. Drainage, tubes and gauze. Cardiac murmur, systolic, not affecting compensation. No other complications. Early warning symptoms: 2 A. M., sudden, sharp pain in right iliac region. No fall of temperature, good pulse. Vomited. No blood count in this case. Seven A. M. (five hours after) severe symptoms. General severe abdominal pains and rigidity, especially right iliac. Pulse 120. Vomiting. Operation eight hours after first pain. Operation three hours after severe symptoms. Perforation in ileum three feet from cecum. Perforation closed with silk. Straw-colored fluid and fecal matter in abdominal cavity. Intestines injected and fibrin flaked — that is, beginning general peritonitis. No cultures recorded. Death eighteen hours after. No autopsy. This case perforated eight hours before operation, when pain noted. If the case had been carefully watched with hourly blood counts between the hours of 2 A. M. and 7 A. M. operation possibly could have been decided on three or four hours sooner. Severe symptoms at 7 A. M. due to general spreading infection.

CASE XIX. Ellam, female, age twenty-one years, white. Drs. Townsend and Burrell. Children's Hospital, October, 1899. General peritonitis. No perforation found. Symptoms of perforation or of peritonitis. Warning pain sudden and not reported. Death. Moderately severe. Widal positive. No complications. No abdominal complaints. Fifth week, thirtieth day, incision, right iliac region. Irrigation. Gauze and tube drainage. Intestinal hemorrhages daily from three days preceding severe symptoms. No abdominal pain with them. Sudden sharp abdominal pain in the middle of the night; no examination. At 9 A. M. (eight hours after) severe pain, abdominal tenderness and resistance, marked in right upper quadrant, slight distention. No leucocyte count recorded. No vomiting. Pulse 130. No fall in temperature noted, but rise to 104° at 9 A. M. May have fallen in the night. Operation eleven and one-half hours after pain. General peritonitis. Injected fibrin flaked intestines. No perforation found. "Thin place," but not necrosed; turned in. "Condition forbade search" for cause of peritonitis. No bacteriology. Death in twelve hours. No autopsy. This case could have been operated sooner. Severe symptoms came suddenly and were not reported for seven or eight hours.

CASE XX. Buckley, male, age thirty-four years, white. Drs. Jackson and Munro. Boston City Hospital, September, 1899. Signs suggestive of perforation in third week. Very sick after this. Perforations in ninth week. General peritonitis. Early warning symptoms. Death. Severe course. No Widal. No diazo. Rose spots. Cardiac enlargement. Systolic murmur. In ninth week, fifty-ninth day, operation. Ether. Time (?). Two incisions, first median; second right flank. Irrigation. Drainage, gauze and tube. In the third week, while pulse and temperature were high, sudden fall of temperature. Collapse. Distended abdomen. Operation advised and refused. Leucocyte count then 6,800. No other count recorded. From this attack very sick until ninth week. Abdomen distended. Pulse and temperature high. One small intestinal hemorrhage in fourth week. Twenty-four hours before operation abdominal pain, especially on left side. Pulse and temperature rising still higher. Twelve to fifteen hours after pain general and severe. Vomiting. Temperature subnormal. Two perforations in ileum three inches apart (where?). Also in ileum (site?). "Recent scar, possibly healed perforation of third week." Perforations closed. General peritonitis, cloudy fluid with fibrin flakes. Infection, colon bacillus. Death ten days after. No autopsy. A frequent leucocyte count would have been very valuable.

CASE XXI. Powell, male, age twenty-seven years, white. Drs. Ames and Munro. Boston City Hospital, September, 1899. No perforation. General peritonitis from ruptured mesenteric glands. Symptoms of perforation exactly simulated. Infection, pure typhoid bacillus. Death. Mild course. Widal positive. Diazo (?). No complications. No abdominal complaints. Last of third week, twenty-first day, operation. Ether. Time (?). Incision, median. Irrigation. Drainage. Pain, abdominal, more on left side at 11 P. M. This required morphine. No further record till 7.30 A. M. (eight and one-half hours later), when collapse, anxious facies, tympanites, general

abdominal tenderness, and rigidity. Temperature rising. (Temperature had been normal for twenty-four hours.) No vomiting. No leucocyte count. Operation twelve hours after pain. No perforations. Two suspicious thin places of inflamed peritoneum over ulcers. Seropurulent general peritonitis. Infection, pure typhoid bacillus. Death in twelve hours. Autopsy: No perforations. General peritonitis from two softened and ruptured mesenteric glands. This case strongly suggests the idea that symptoms of general peritonitis are identical with the "supposed symptoms" of perforation, and suggests the virulence of bacillus typhosus in peritonitis.

CASE XXII. Sawyer, female, age sixteen years, white. Drs. G. B. Shattuck and Watson. Boston City Hospital, December, 1897. No perforation. Nothing to account for symptoms of infection. Leucocyte count not taken. Recovered. Mild course. Widal positive. Diazo (?). No complications. No abdominal complaints. In sixth week, thirty-sixth day, operation. Ether. Time (?). Incision, right iliac. No irrigation. No drainage. Uneventful case. Temperature falling steadily. At no time especially sick. The afternoon before operation, severe abdominal pain and tenderness in right iliac. Temperature rising to 104°. Pain local in "lower abdomen," gradually increasing, not sudden. Next morning pain and tenderness general, but more on right side. Temperature 102°, pulse 128. No vomiting. Abdominal muscles rigid. No distention. No leucocyte count. "Absence of marked shock." Operation seventeen to eighteen hours after first symptoms. No perforations. No peritonitis. Appendix not actively inflamed, but bound by old adhesions; removed. Recovery uneventful. Important case from diagnostic side. Pain, tenderness, rigidity, rise in temperature and pulse. No great shock. No vomiting. The leucocyte count is all important, but is not recorded.

CASE XXIII. Eagles, female, age twenty years, white. Drs. Vickery and Mixter. Massachusetts General Hospital, August, 1898. No perforation found at operation. No cause for symptoms of perforation, which were definite. Recovered. Moderately severe. Widal positive. Complications, cardiac and renal. Abdominal complaints frequent. Fourth week, operation. Ether. Time (?). Incision. No irrigation. No drainage. Moderately severe case. Complicated by mitral regurgitation, with poor compensation and by acute renal congestion. Both cardiac and renal complications improved in hospital. Frequent complaints of moderate abdominal pain, which was due to retention of urine and relieved by catheter. Probably cystitis. Temperature lower and sitting up in bed in fourth week, when pain in abdomen complained of; white count at this time 9,200. Leucocyte count at entrance 4,200; twelve hours before operation 9,200, when pain first complained of; one hour before operation 12,000. Twelve hours before operation, pain, abdominal tenderness and spasm, mainly on the right side; slight distention; pulse 118. Temperature (?) No vomiting. Operation twenty-four hours after pain first noted. Nothing found. Recovery. Symptoms of gradual perforation, including some leucocytosis. No marked shock recorded. Query as to how to account for leucocyte count. Compare this case with Sawyer, Case XXII. Same symptoms, but in Sawyer's case no leucocyte count. The comparative value of leucocyte count in this case is questionable.

CASE XXIV. Seile, male, age twenty-seven years, white. Dr. Balch. Massachusetts General Hospital, September, 1897. Symptoms of peritonitis of gradual onset. Operation found necrosed patch, but no microscopic general peritonitis. No leucocyte count. No cultures. Death. Mild course. Widal positive. No complications. Fifth week, operation. Ether. Time (?). Incision, median. Irrigation. No drainage. Slight intestinal hemorrhages at intervals for three weeks before operation. Ten days before, abdominal distention, but no pain or rigidity. Temperature rising. Distention only transient, none two days before operation. September 25th, at noon, pulse 140; some sweating in the afternoon. Pain below and to left of umbilicus. Abdomen distended (spasm, vomiting and white count not recorded). (Temperature not recorded.) September 26th, picture of peritonitis, anxious face, pain, restlessness. Liver dulness obliterated. Operation twenty-four hours after first symptoms. No perforation, one Peyer's patch, one and one-half feet from cecum, threatening perforation, with fibrin area on intestine, "green, necrotic area," this inverted. No extravasation in peritoneal cavity. No bacteriology. Death in ten hours. Autopsy showed no general peritonitis. Only local necrotic patch. Death from typhoid.

CASE A. Eladed, male, age fifteen years, white. Drs. Bowditch and Munro. 1899. Case of general peritonitis. No perforations. Gall-bladder infected with typhoid bacilli. Cause of peritonitis unknown. Sick case. Widal negative. Diazo negative. Large spleen. Sick for four weeks. Came into hospital with general peritonitis. "Nearly moribund at entrance" (Bowditch). Delirious; distended belly; distended, rigid muscles; temperature 104°; pulse 120. Leucocytes 5,200 (note, purulent peritonitis of long standing). No symptoms of perforation. At operation for general peritonitis no perforations found. Gall-bladder opened, but no evidence of origin of peritonitis. Cultures of free peritoneal fluid, staphylococcus albus. Cultures from gall-bladder, bacillus typhosus. Exploration only half satisfactory (Munro). No anatomical evidence of typhoid found. Death in twenty-four hours. No autopsy. No conclusive proof that this was a case of general peritonitis during typhoid. Moribund case of general peritonitis, cause of which doubtful. Should not be counted with other cases.

CASE B. Collins, male, age twenty-five years, white. Drs. Jackson and Gavin. Boston City Hospital, September, 1895. Case of general peritonitis. No evidence of typhoid fever. No Widal. No rose spots. No spleen. Case of no value. This case had general peritonitis, was operated on and died. No reason to call it typhoid. No post-mortem. Leucocytes 32,000 before operation.

CASE C. James, male, age (?). Dr. Munro. Boston City Hospital, 1895. Case of general peritonitis. No evidence of typhoid or of perforation. Case of no value. Case entered the Boston City Hospital with general peritonitis. Operated on and died. No cause for peritonitis found. No autopsy.

SEPARATION OF THE EPIPHYSIS OF THE OLECRANON.

BY F. J. COTTON, M.D., BOSTON.

SEPARATION of the epiphysis of the olecranon is classified as one of the rarest of the epiphyseal separations. Poland, in his recent book, gives no instance of this separation save as a complication of other injuries of the elbow, unless one accepts a doubtful case by Bryant, and a case of Hamilton's where he produced the injury by forced flexion in attempting to reduce an old dislocation of the elbow. Nor has the writer, in a short search of the literature, found any case recorded where this separation occurred without other injury.

There is experimental evidence enough (Poland, Gueretin and Salmon) to show the possibility and ease of separating this epiphysis, but curiously enough, all the experimenters seem to have used forced hyperextension to produce it. Muscular action in resisting flexion, the apparent cause in the following cases, cannot, of course, readily be imitated on the cadaver.

Both the cases here reported came under the care of the writer while he was acting out-patient surgeon to the City Hospital.

The first case was in a naval apprentice, a lad of sixteen years. He gave a history of having had a fall on the hand without any blow on the elbow.

This fall had been followed by marked disability of the arm, and Dr. Saunders, the ship surgeon, recognizing an injury to the olecranon, had put the arm up on a straight splint.

When the boy was referred to the hospital, about two months later, he was still wearing a short splint. The arm showed no disturbance in the relation of the bony landmarks, save a loss of prominence of the tip of the olecranon. On careful palpation a fragment could be felt just above what seemed to be the end of the ulna; this was, as nearly as could be estimated, one-half to three-fourths inch in either diameter, and not over one-fourth to one-third inch in thickness, perhaps less. It was freely movable over a short range laterally but not movable, to an appreciable extent, vertically. The displacement was upward and forward, the interval of separation about one-third inch. A skiagraph was taken, and showed above the outline of the olecranon an outline evidently representing the cap of the separated epiphysis, displaced upward and forward. The gap we should expect to see left in the place of the epiphysis is not obvious in the skiagraph, but on palpation, comparing the two arms at a like angle of flexion, the shortening of the olecranon was very definite, though not great.

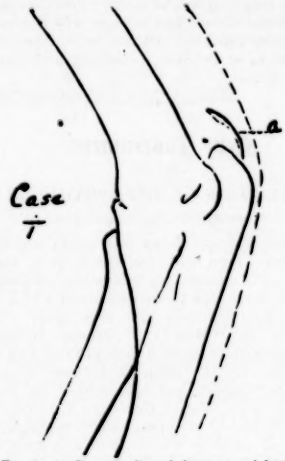


Fig. 1. (a) Posterior line of olecranon epiphysis.

The comparatively slight showing of the shadow of the epiphysis, despite the patient's age (sixteen years), will be referred to later.

When first seen the elbow could be flexed only about 20 degrees. There was no sign of union of the epiphysis to the ulnar shaft, but on the other hand there was in flexion no apparent tendency of the triceps to cause further separation. A week later the fragment was less movable. Massage was then begun. After another week or ten days fibrous union of the fragment to the olecranon could be clearly made out; the interval of separation was now one-third to one-half inch The joint was freely movable from an angle of 135 degrees to one of 170 degrees (that is, within 10 degrees of the straight line). The arm was still kept on a short obtuse-angled splint and massaged regularly three times a week, with very gentle passive motion.

At the end of six weeks, union of the fragment being firm, the splint was omitted and the arm simply put in a sling so as to allow of partial flexion. Flexion of about 60 degrees was then possible, and the range of motion was slowly but steadily increasing. The arm was painless and was already useful to some extent. From this point on the patient was not seen again, but he is said to have shipped later on a merchant liner, so presumably the arm is doing good service.[1]

The second case was in a boy of eleven years. Here again there was a definite history of a fall on the hand without direct violence to the elbow. The patient had been dressed in the accident-room soon after the injury and came in wearing a splint which fixed the arm at a very obtuse angle. There was at this time some swelling and a slight ecchymosis on the outer side of the arm above the elbow. The bony landmarks of the elbow were in normal relation, but on careful palpation a small mass was to be felt, apparently about one-half inch in diameter either way, and about one-quarter inch in thickness vertically. This was separated from the ulna by an interval of not over one-eighth inch; the slight displacement was upward and forward. The fragment was loose and could readily be rocked under the fingers, but was movable only from side to side, and that very slightly. On attempted flexion there was only a very slight increase in the distance of the separation.

The x-ray taken in this case shows a distinct and typical nucleus of ossification at the site of the epiphysis; the displacement is not notable in this view; the ossified bone is intact.

The arm was put up on a splint at an angle of 15 or 20 degrees less than full extension.

Three weeks later the fragment was still movable, but there was no tendency to an increase of the interval of separation; massage and cautious passive motion were begun. Five days later motion was possible from an angle of 135 degrees to within 10 degrees of full extension. A month from the time of the injury the splint was omitted. There was then a possible flexion of only 40 degrees and the fragment was not yet firmly fixed in place on the ulna, but there was no increase of the separation interval.

Three months from the date of the accident the elbow was examined again. The epiphysis was then very slightly displaced forward and was no longer movable. The motions of the elbow were all normal save for a 10- or 15-degree limitation of extreme flexion. There was no pain and the joint was functionally perfect.

It would seem that both these cases were separations of the olecranon epiphysis from muscular action alone. The insertion of the triceps is largely on the epiphysis, but it is undoubtedly due to the fact that the insertion and the tendinous expansions run beyond the epiphyseal line that there was no more considerable separation in these cases; evidently the triceps fibres running beyond the epiphyseal junction withstood the strain after the junction itself had given way. The same thing may occur, according to Stimson, in

[1] Since the above was written the patient was seen again. Function is normal, deformity trifling. Flexion still about 20 degrees, extension 25 degrees short of normal, but still improving.

fractures of the olecranon from muscular violence. In a younger child, where the epiphysis is relatively larger, this safeguard against separation would probably not hold good, but, on the other hand, in such young children sufficiently vigorous muscular action to wrench off the epiphysis in this way would hardly be possible.

Why the separation of this epiphysis should not occur clinically as a result of violent hyperextension, in the way that it has been produced experimentally, is not clear; perhaps the cases are not recognized, though this seems hardly likely.

In regard to treatment in these cases probably the second, rather than the first of the two reported, approximates the period of fixation and the treatment which should ordinarily suffice for good results, though some allowance would have to be made for the difference in age of the patients. At all events, given a short interval of separation, six or seven weeks, at most, of fixation in partial extension with

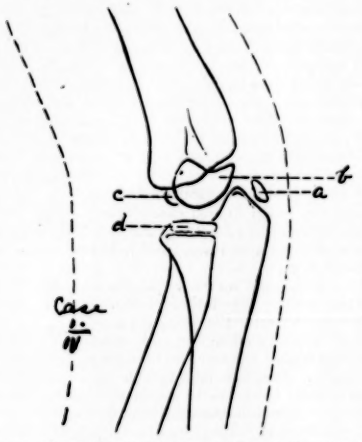


FIG. 2. (*a*) Epiphysis of olecranon; (*b*) of capitellum; (*c*) of trochlea; (*d*) of radial head.

massage, followed by cautious passive and active motion, would seem to be the indication. In the second case consolidation began early and it was possible to shorten the period of treatment.

One point in relation to the diagnosis of such cases, especially by means of the skiagraph, should be brought out, and that is the different forms presented by the olecranon epiphysis in different individuals. According to Poland, the epiphysis at ten years includes about a third of the olecranon, at fourteen and one-half years it is about three-eighths inch in vertical diameter, and at fifteen years it includes one-third of the articular surface and but one-fourth inch of the posterior surface. This does not seem to apply to all cases. There is, for instance, one specimen in the Warren Museum (No. 537, age fifteen years) which corresponds to this description, as do others (553, 334 and an unnumbered specimen) of seven, eight and ten years, but in specimen No. 417, age eighteen, the epiphysis, still distinct, is not much more than a scale at the posterior angle of the olecranon. No. 457, age seventeen years, partly united, seems to show a similar line of junction, and in still another (an unnumbered specimen without data, but apparently from a child of about nine or ten years) the same form of epiphysis is to be seen; the epiphysis is thicker, but the line of junction runs upward and forward and none of the articular surface is formed by the epiphysis.

It would seem, then, that there is more than one form for this epiphysis. The first of the foregoing cases seems, from the evidence of the skiagraph and the examination, to represent this thinner, scale-like form of epiphysis just described, while the second presents the more usual form, an epiphysis of some thickness with a centre of ossification of some considerable size.

As to the clinical importance of these separations of the olecranon epiphysis, it seems noteworthy only that the separation may occur without other injury, apparently from muscular action; that little reaction in the joint results from the injury; that the separated epiphysis does not tend to become widely separated, and that union with the shaft and entire restoration of function are to be aimed at, seemingly with some confidence of success.

New Instrument.

A MODIFICATION OF THE SPHYGMOGRAPH.[1]

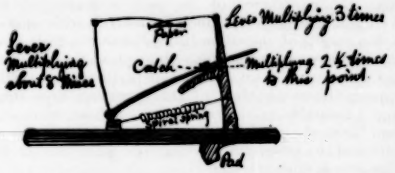
BY ROBERT T. EDES, M.D., BOSTON.

THE sphygmograph is an instrument which, I believe, has never been held in high respect by the physiologists. It is unnecessary to analyze all its defects and inaccuracies in the various forms in which it has appeared. This has been very thoroughly done by Baumgarten in "Wood's Reference Handbook." But notwithstanding these it has always had a certain attraction for the clinician because it gives a record more compact and less subject to personal error, if not more delicate, than even the well-trained finger. It is useless to expect from it pathognomonic indications of valvular disease, but, with care, it can be made to show certain conditions of the blood pressure that are, if not more easily detectable, at least more easily demonstrable in this way and which are very useful in studying and recording diseases, disorders and the action of remedies, especially such as involve the vasomotor system.

A clinical sphygmograph must be convenient and not require a tedious adjustment of pads, straps and support, and it is this virtue which has made the "Pond" instrument, when used without the arm rest, so popular in this country. But it is defective in the following points. The resistance to the tension of the artery should be, so far as possible, by a spring and not by weight, because the error due to *vis inertiæ* is less, and also because unless the instrument is held exactly upright, which is not always easy at the bedside, the levers are not working at all times under the same conditions. The spring should be a metal one. Rubber springs are constantly changing by time and readjustment. The pressure used

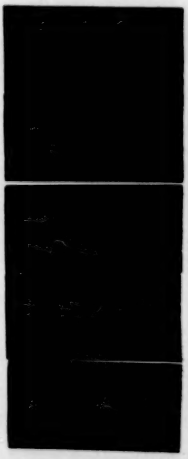
[1] Read in abstract at the Association of American Physicians, May 3, 1900.

should be simply the pressure of the pad on the artery, or as nearly so as possible and not the pressure of the base of the instrument on the adjacent tissues. Of course no sphymograph to be used on the human subject can be free from the modifying effects of the tissues superjacent to the artery which may, equally of course, vary a good deal with the elasticity of the skin and the amount of connective tissue present. The base of the "Pond" is so broad that when the little metal disk within the rubber cap is pressed down on to the radial, the graduation on its stem indicates not the pressure over the artery but that of the metal cap upon the edge of the radius, the flexor carpi radialis, or both. It is also very desirable that the tracing should itself be a record of the pressure at which it is made. This roughly made instrument indicates, I think, how some of these defects can be remedied.



Some years ago I made and published a short account of a sphygmograph with a single lever, in which the tracing taken, which of course was only slightly multiplied, could be further enlarged by the use of a cylindrical lens.[2] As one might say, the amplification usually accomplished by a second lever is here done by a beam of light. The objection to this was that the tracing could not be used for demonstration without the lens and could not easily be recorded for convenient use. This slightly magnified tracing, however (only two and a half or three times), when taken on the same slip with the usual more highly magnified one is useful for comparison with it. It throws out a certain amount of instrumental error dependent on looseness of joints and on acquired velocity of the most rapidly moving parts. A too delicate action of rapidly moving levers carries the writing point beyond its proper mark in each direction. A very beautifully constructed instrument shown me some years ago by Dr. Hopkins, of Buffalo, was open to this objection in the highest degree and gave tracings which indicated an amplitude of movement considerably beyond that of the arterial wall. Elasticity and want of rigidity in the levers have very much the same effect. If a very long lever multiplying the necessary number of times (say twenty) could be made absolutely rigid and extremely light, then a sphygmograph of only one lever, but using a slip of paper wide enough to register all pressures, would be the ideal.

In the modification which I now present I have endeavored to combine these essential points: magnification sufficient to be read without a glass, the easy and convenient applicability of the "Pond," the observation and recording of actual pressure over the artery alone, and the diminution of some instrumental errors. It consists of a bent lever of which one end rests on the artery and the other carries a writing needle. It is held by a spiral spring. Pressure upon the artery is made and changed simply by the amount of force employed by the hand which holds the instrument, the pressure upon the other tissues of the wrist having no effect upon the tracing except through the lever. The sphygmograph is held between the thumb and first two fingers, the other two or edge of the hand supporting themselves on the wrist. This slightly magnified trace indicates by its position on the slip the amount of pressure on the end of the lever placed upon the artery; and the amount of movement is sufficient to allow the amplitude of the wave to be estimated, and the best pressure for development to be selected. It can be made more distinct by the use of the cylindrical glass. The range of pressures with the spring now on the instrument, on a slip of the usual width, is from 75 to 250 grammes. The second lever, multiplying considerably more, does not have a fixed connection with the first, but by means of a notched arm is attached to it when the degree of pressure at which the tracing is to be taken has been determined. The pressure can be varied a little even after the two levers are connected, without throwing the writing point off the smoked slip. We have, then, on the slip two tracings, one magnified three times, showing exactly the pressure and the amplitude at that pressure and free from exaggeration; and the second corresponding to the only one given by the usual form of sphygmograph which brings out the minuter peculiarities of the pulse wave.



As I am now presenting this combination rather as a suggestion than as a finished instrument, I can speak of some points which might be improved in the hands of a better workman than I am. I overheard a hardware salesman say with considerable emphasis to a customer who thought he could buy a spring to suit him ready made, "Making a spring is an *art*." It is one which I do not possess either in theory or practice. Although the spiral spring which I have here covers, I think, most ordinary ranges of pressure, yet I presume it would be possible to temper a steel

[2] Journal American Medical Association.

spring so as to do much better and make a paper of the ordinary width record a range from nearer zero to a considerably higher point than this. But that which I found most difficult to arrange satisfactorily looks at first sight so exceedingly simple that it seems almost silly to speak of it; that is, the catch between the two levers, which should be very light, very easy and quick of adjustment, without any slip, and on the other hand without friction or stiffness.

Reports of Societies.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

A. K. STONE, M.D., SECRETARY.

REGULAR meeting Monday, April 16, 1900, DR. E. H. BRADFORD in the chair.

DR. G. B. SHATTUCK presented a paper entitled

A STUDY OF TWENTY-FOUR CASES OF TYPHOID FEVER WITH SYMPTOMS OF PERITONEAL INFECTION; LAPAROTOMY.[1]

Before the presentation of the report itself I will make in behalf of the Committee a very brief statement. This is a report upon the cases and such discussion as there was at a preceding meeting of this Society. I would like to say that a great deal of labor has been expended upon the report. The report itself is divided into two parts: The concise presentation of each case, which is the result of as careful an investigation of each case as it was possible to make; this is preceded by an analysis of the cases from different points of view and the general remarks and conclusions which the Committee derive therefrom. I do not know whether all the gentlemen who have submitted cases will agree with all our statements in regard to the cases themselves, or whether they will agree with regard to all our conclusions, but whether they agree or do not agree, whether they should be right and we should be wrong, it will not be because we have not given the utmost pains and taken much time in order to be right. The general results may be summed up in a word as far as we draw conclusions from these cases, that they point to the importance of an early diagnosis, and we state what considerations we think are especially important in order that this early diagnosis may be made; especial stress is laid upon the recognition of *pain* — not mere discomfort — and upon the question of the use of the white blood count and its proper use in aiding in this early diagnosis. Then the other point around which the conclusions turn is the character of the infection, which undoubtedly varies in different cases, and emphasis is laid upon the point that the perforation is one thing and the later peritoneal infection is another thing. These should be kept distinct. As I have said, a great deal of work has been expended upon the report; much of this work has been done by Dr. Farrar Cobb, and the Committee desire that he should read the paper.

DR. FITZ: It seems to me the Committee deserve the highest credit for the work they have done and the thoroughness with which the results have been prepared and the force and vigor with which they have been presented. Certainly the paper is the most intelligent, careful and comprehensive consideration of the subject that I know of. The Committee wish the paper to be criticised, but it is impossible for any attempt to be made to carefully criticise it at such short notice. One simply admires and that is about all there is to be said. The one general thought that came to my mind as the paper was being read was that what was needed in the first instance was control with a larger series of cases than is here collected. For instance, with reference to the question of pain, it may be that the next 100 cases, more or less, will show a still higher percentage of pain, proving to be insignificant so far as its relation to perforation is concerned.

The next thought that occurred to me was that the report suggested very emphatically the kind of work that had to be done, and that so far as hopefulness from the experience of the past is concerned, we were not after all very much better off with regard to the results of operation in this most modern time than we have been for some time previous, and that in cases even with no evidence of peritonitis and with appearances at the time of the operation suggesting that a favorable result was likely to follow, it is evident that the prognosis must still be held in abeyance and the probability is that the patient will die whatever is done for him.

There is only one word I have to say in what might be called self-defence and that is with reference to the question of the prognosis being the more favorable the more the condition resembles that of appendicitis. It was not my thought in making that observation to suggest that cases of appendicitis were common in typhoid fever. The point was that the simulation of appendicitis meant a more circumscribed peritonitis and the more circumscribed the inflammatory process at the time of the operation the more likely the latter was to prove successful. This statement was based on an analysis of operations done years before and seemed to be confirmed by evidence collected at the time, but I do not undertake at present to defend very warmly a paper written seven or eight years ago upon a subject which is so rapidly growing in interest, and in which experience is constantly increasing.

DR. MUNRO: I have nothing special to say except to heartily endorse everything that I could grasp in hearing the paper read to-night. It establishes a much better basis for the treatment of these cases than we have had heretofore. I am sure, in the cases I have watched in my own practice and in the practice of others, that one finds as serious a condition from necrosis without actual perforation as from actual perforation. In almost all the cases that came under my own care I found by careful questioning that there had been antedating symptoms of a preperforative stage which had escaped the observation of the medical house officer. This was so fixed in my mind that I had previously spoken of it to several of my colleagues. As to the question of an anesthetic, I am positive that Cushing, of Baltimore, lays too much stress on the value of cocaine. I am positive as I can be of anything in surgery that ether properly given, given certainly as we give it at the City Hospital, in the cases of typhoid perforation that have not developed acute general peritonitis, does no harm, and that the operation can be done more rapidly and safely

[1] See page 677 of the Journal.

than under local anesthesia. I lost, to be sure, one case on the table where the patient vomited into her own trachea, an unpardonable accident. It was, however, a case of operation in collapse and was offered only as a last resort. Setting aside those severe cases as you set aside the severe cases of strangulated hernia or general peritonitis from other causes, I am sure that ether is harmless in early cases of perforation or in the preperforative stage. The operation also, I believe, is well borne except in cases of acute general purulent peritonitis. There is practically no shock, when the operation is done in twenty to thirty minutes, certainly not shock enough to warrant delay or hesitation. When, on the other hand, the abdomen is the seat of an acute purulent peritonitis, any operation is serious or fatal, and it is to avoid operating at this stage that we must use every available means, not least of which is the light given us by this invaluable paper read to-night.

DR. ELLIOT: I think this most admirable paper deserves some discussion. The thing that has occurred to me in listening to the paper is that a very sharp line is drawn between the operations that were done for the perforation itself and those done for the septic general peritonitis. It seems to me that while theoretically that may be a good point to make, practically the vast majority of operations must be done for a more or less extensive septic peritonitis. A few years ago there was a great deal of talk about whether an appendix had been perforated or not, but after we had had a little more experience, we found it did not make any difference whether it was perforated or not; there was apt to be septic peritonitis around the appendix before it was perforated. It seems to me these preperforative cases of ulcer suggest the key to the situation. The report would maintain this point by saying that in certain cases the ulcer sloughs out suddenly and leaves a hole, but the chance of successfully closing such a hole would be very rare indeed. We know that actual fecal extravasation is very fatal in spite of early operations. I think, as is maintained in the latter part of the paper, we must watch for beginning septic peritonitis. That is the only chance we have for saving these cases. Such a peritonitis as comes just before the ulcer perforates, or from an ulcer partly closed by adhesions, will give a fair chance for operation. And apropos of the leucocytosis, although I should not like to give or assume to have an opinion on leucocytosis above scientific men, yet I think this account of these cases is a pretty strong argument against leucocytosis being of any great value in operating. In the first place, the only man who has a theory which would account for the varying leucocytosis is Cushing, and Cushing and Finney have both done operations, according to this account, on the basis that leucocytosis was a diagnostic symptom where they found no perforation. That in itself is a pretty severe setback for the leucocytosis theory. Then, in the reader's cases where the leucocytosis was given there appears to be no certainty that the white corpuscles are increased. At a meeting of the Surgical Section we went over all the cases of peritonitis in which the leucocytosis was given in the hospital records. In half the cases there was leucocytosis and in half the cases there was not leucocytosis, and the same variation appears in this report. I think at present it is clear we cannot be guided by leucocytosis in the least in operating for general peritonitis. It was said at that meeting that it is a great comfort if you are going to do an operation for general peritonitis to find there is a leucocytosis. It may be, but the crucial test is, would you operate if everything else was even; if you were in great doubt, would you let a leucocytosis lead you into an operation? I think I am not prepared to operate on a blood count from the evidence as given in the report before us.

DR. BEACH: I am grateful for the report of the Committee and appreciative of the formulæ which the conclusions give as a working basis for future reference and operations. Upon the question of anesthesia, my conviction remains in favor of the advantages supplied by the *judicious* administration of ether, in the avoidance of shock and mental disturbance.

It is inevitable that some patients while conscious should suffer permanent damage from the unavoidable routine of an abdominal section, and true that others could be indifferent to it, although the pain in both classes should be wholly controlled by local anesthesia.

In patients whose vital forces have been already lowered by continued fever, hemorrhage or beginning peritonitis the question of adding the uncertain degree of nervous tension and excitement commonly associated with a considerable operation without anesthesia becomes serious and deserves careful consideration.

After-treatment. — For my own part, the results in these cases are so dependent upon the general treatment to which they are subject after any operation, that I hoped for its discussion in the masterly report of the Committee. It is not difficult to understand, however, that this side of the investigation could be better left for the accumulation of additional and important evidence, necessary for the establishment of safe and reliable methods.

Meantime the surgeon must admit that abdominal section will be required in cases, without the preparation by catharsis commonly employed before laparotomies. After operation, where the intestine is softened and much inflamed, the usual measures may provoke increased perforation and hemorrhage. On the other hand, an expectant treatment may by followed by intestinal obstruction, great distention with rupture of sutured ulcerations and fecal vomiting. The requirements of individual cases will modify more or less diet and remedies in satisfactory use at the time of operation.

DR. SHATTUCK: It seems to me the report covers one of the points made by Dr. Elliot. I think the report acknowledges a similarity of symptoms and conditions between the cases in which necrotic areas exist which are those of the preperforative stage and the cases of actual perforation with larger or less destruction of tissue.

As to the question of leucocytosis, the Committee thought it was extremely desirable to find something which would ameliorate the difficulties of the physician in making an early diagnosis. The surgeons say: "We have done our best. If you cannot turn these cases in to us more promptly or in better condition, you can hardly ask more of us than you do now," and that is about what you come up against in considering this question. It was the extreme desire of the Committee to find something which would alleviate the hard position of what the report would call the diagnosing physician, and it was in hopes merely that the study of leucocytosis might offer some such help that the Committee went into it as much as they have. I think

that our position in regard to it is carefully guarded. We think that due justice has not been done in the past to its possibilities of usefulness; the future may change the views which are at present propounded, but these at least deserve more careful and extended application to practice. The indications of pain as a warning, especially in conjunction with spasm and tenderness and the white count, merit more careful attention.

DR. ELLIOT: My remarks were simply directed to the regrets expressed that we could not get at the ulcer when it first perforated and that we had to operate with peritonitis, and it seemed to me that such would always be the case. And also the report deplores that we had not more data on leucocytosis. It seems to me it was pretty well proven that leucocytosis is not of any very great value in these cases.

AMERICAN MEDICAL ASSOCIATION.

FIFTY-FIRST ANNUAL MEETING, HELD AT ATLANTIC CITY, N. J., JUNE 5–8, 1900.

SECTION ON SURGERY AND ANATOMY.

(Continued from No. 25, p. 668.)

FOURTH DAY.

THE TREATMENT OF TUBERCULOSIS OF THE KNEE-JOINT.

DR. WISNER TOWNSEND, of New York, read this paper. The treatment of tuberculosis should be both constitutional and local. The former is too generally neglected; it should consist in careful attention to diet, the use of creosote and general tonics, out-of-door life, and careful attention to the general health. Rest is indicated if the exercise gives no benefit. In the local treatment the joint should be protected from every slight jar. This is best accomplished by the use of the Thomas knee-splint with a high-soled shoe for the opposite side. Plaster of Paris or silicate of soda may be sometimes used. In any measures to overcome deformity, force should be avoided. Excision in children should not be performed if any other treatment can be substituted on account of the interference with the normal growth of the limb; in adults excision should be performed in the majority of cases. Complicating abscesses should be evacuated and sinuses dissected out or treated by stimulating injections. The limb should be given complete protection for at least two years.

DR. OCHSNER, of Chicago, considers constitutional treatment of great importance. After operating on patients who come from a part of Chicago known as "Little Hell," if they return to that section of the city to live the disease often recurs in some part of the body, while if their residence is changed to "Lake View," another part of the city, which is high and dry, though also inhabited by working people, the patient usually recovers permanently.

DR. BULLITT, of Louisville, Ky., believes that protective treatment gives better results than operations in these cases.

DR. SULLIVAN, of Chicago, emphasized the importance of early diagnosis. If an early diagnosis is made and suitable general and local treatment instituted, excision will be required in but few cases.

FRACTURES OF THE PATELLA,

by DR. J. M. BARTON, of Philadelphia. The results of the methods of treatment of fracture of the patella which have been in vogue in the past are far from satisfactory, and surgeons now generally prefer to operate in case of this injury. Operation is usually deferred to the tenth day after injury on account of the lessened danger of infection, and it may well be undertaken much later. The prepatellar tissues generally get interposed between the bony fragments and it is this that gives rise to non-union. Asepsis is the point of greatest importance in successful operation; after opening the joint the prepatellar tissues are removed from between the bony fragments, clots are removed and the joint cavity is irrigated with sterile water, never with an antiseptic solution. The fragments are then united with silver wire, drainage is inserted for twenty-four hours, and a fixation dressing is applied. Rapid bony union follows.

UNREDUCED AND IRREDUCIBLE DISLOCATIONS.

DR. ARTHUR D. BEVAN, of Chicago, based his paper on three dislocations of the elbow-joint, one dislocation of the ulna at the wrist, one dorsal dislocation of the hip-joint, and three others not operated upon, and one dislocation of the astragalus. In two of the cases of backward dislocation of the elbow a fragment of bone was found in the joint, which prevented reduction. In the third case no such bony fragment was found. From his observation of these cases Bevan concludes that operation for reduction of irreducible dislocations of the elbow-joint are justifiable if carried out aseptically; there is generally a fragment of bone in the joint. He prefers double lateral incisions with no drainage; he dresses in a semiflexed position and uses passive motion early. The mortality is less than five per cent. In some very old cases it is possibly best to remove the lower end of the humerus. Within the past year, Bevan has had five cases of irreducible dislocations of the hip under observation; three of these were accompanied with fracture of the edge of the acetabulum. He considers the avoidance of drainage very important, and in one case he got union by first intention. In another case an engineer was thrown from his cab, injuring his ankle; the astragalus was twisted to an angle of ninety degrees, and remained so for three weeks; operation was performed, and a useful joint resulted. Points especially emphasized were: The necessity for the use of the X-rays in diagnosis, the frequency of accompanying fracture, and the importance of not using drainage.

DR. MCLEAN, of Detroit, called attention to the great changes which had been recently made in our methods of treating fractures and dislocations. It is a matter of small importance whether a fracture or dislocation is compound or not as long as the wound of operation is aseptic.

DR. BLAKE, of Baltimore, agrees with Barton as to the necessity for perfect asepsis in operations for suture of the patella. He prefers not to use drainage and not to use the finger in the wound.

DR. TINKER, of Philadelphia, called attention to the aluminium bronze as a material for wiring the patella. This was introduced by German operators, and is now in almost universal use in Germany instead of silver wire. The advantage of this material is that it is gradually absorbed, the aluminium being acted upon

by the normal body fluids. It is composed of aluminium with a small proportion of copper to give it sufficient tensile strength. X-ray pictures have shown that the wire remains for at least a year, but German operators claim that it is eventually absorbed.

Dr. Ochsner, of Chicago, prefers to operate immediately, as the patient thus avoids loss of time. He prefers a transverse incision, and uses chromicized gut as a suture material. The patients are able to walk about three weeks after operation.

Dr. Means, of Columbus, O., has operated upon nine cases of fracture of the patella by wiring and has had complete recoveries in all of them.

Dr. Winslow, of Baltimore, has found it necessary to divide the triceps tendon in several cases in order to reduce dislocation of the elbow-joint; perhaps this might be avoided by using double lateral incisions, as Bevan suggested.

Dr. Hart, of China, has performed a number of operations for wiring the patella and for reducing dislocations. He described the difficulties encountered in restraining the unintelligent Chinese patients.

Dr. McFarland, of Pittsburg, does not agree that all cases of fracture of the patella should be treated by wiring.

Dr. Barton, in closing, stated that as he wears rubber gloves there can be no great disadvantage in introducing the finger into the wound. He prefers to use non-absorbable suture material, for in many cases the joint is used before complete bony union has occurred.

Dr. Bevan, in closing, stated that he does not usually advise operation for fracture of the patella, for he has obtained good results without it. In two cases treated by conservative methods the x-rays demonstrated that bony union had occurred with a functionally perfect result. He has seen one death and several cases of sepsis following this operation, and believes that no man in general practice should open any joint.

TETANUS TREATED WITH ANTITETANIC SERUM.

Dr. J. D. Blake, of Baltimore, believes that the essentials in the treatment of tetanus are seeing patients early and using the serum freely. He has treated five consecutive cases with but one death, much better results than he formerly obtained by other methods of treatment. The amount of serum used was 50, 60 and 70 centimetres in the cases which recovered, and 40 centimetres in a case that died. The specific organism was found in but two cases.

Dr. Whitmore, of New York, mentioned nine cases which were treated at the Roosevelt Hospital by trephining and injecting the serum, with seven deaths.

Dr. Blake, in closing, expressed his belief that the unfavorable results are usually due to the fact that the serum is not used early enough.

GROWTHS IN THE FRONTAL SINUS,

by Dr. W. D. Hamilton, of Columbus, O. The diagnosis of these cases is difficult and usually impossible until late; a mortality of 33 per cent has been given. Dr. Hamilton reported two cases of osteoma, which he removed from the frontal sinuses. In one case the bony growth removed weighed four and one-half ounces, and was exceedingly dense. The second osteoma was considerably softer and was complicated by extensive empyema.

Dr. Dawbarn, of New York, advises the use of a round sewing needle, as an aid in the early diagnosis of bony growths. Malignant disease causes softening and decalcification, and in these cases the needle can be pushed in easily, which is not the case in ordinary bone tissue. It is best not to crush through the septum into the sinuses for drainage; by curving a probe a drainage tube can be inserted through the natural passages.

INJURIES OF THE SKULL AND ITS CONTENTS.

Dr. W. H. Earles, of Milwaukee, quoted Sir Astley Cooper that "no injury to the skull is too slight to be despised or too severe to be despaired of." He believes that intervention is more frequently indicated than is generally believed in the cases of fracture of the skull, and specially if there is laceration of the soft tissues and the depression, operation is justifiable.

LAMINECTOMY FOR DISEASES AND INJURIES OF THE SPINAL CORD.

Dr. Samuel Lloyd, of New York, reports 15 cases in which he has operated for paraplegia resulting from Pott's disease of the spine. In all, 118 operations have been performed. Operation of itself is not so dangerous, but death usually results later from the tuberculous process. In advanced cases operation is of little advantage unless the abscess is located posteriorly. Non-operative treatment should be thoroughly tried, and if not successful, operation should be performed early without waiting for ascending or descending myelitis. Pressure is usually caused by tuberculous débris. Operations in the lower part of the spine show the most favorable results. Chipault has collected 22 laminectomies for tumors, with 16 recoveries. Permanent cure is generally not to be expected, because the growths are usually malignant. In case of fracture there is no hope if the function of the cord is destroyed by pulpification. Obliteration of the deep reflexes generally contraindicates operation. We should wait until shock is passed and then operate if there is not complete destruction; if hemorrhage is producing extension of the symptoms; if there is improvement at first and the symptoms become worse later; or if there is full recovery, with paraplegia and symptoms developing later, probably from the formation of callus. The mortality of operation is now about 50 per cent., but we should give the patients what little chance there is of recovery.

Dr. Dawbarn, of New York City, had no criticism to make, but only desired to emphasize the importance of early operation. He mentioned the case of a girl who fell from a window, breaking her back; two hours later operation was performed and a spicule of bone was removed, which was sticking into the cord from in front. Terrific hemorrhage was controlled by gauze packing, and good recovery resulted; he urges that these cases are in the same category as fracture of the skull, and we should not wait for operation.

Dr. Hough, of New Bedford, Mass., reported a case in which he removed the laminæ of the sixth and seventh cerebral vertebræ for injury. A slight paralysis of the right arm persists, otherwise recovery is perfect.

Dr. Llgyd, in closing, emphasized the importance of early operation. We should not cease removing bone until the cord pulsates; if the dura is cyanotic

from the presence of blood clot it should be opened and evacuated.

OPERATIONS FOR INJURIES OF THE MEDIAN AND ULNAR NERVES.

DR. B. B. EADS, of Chicago, reported one case in which he operated to free the ulnar nerves from a cicatrix and four cases in which he performed nerve suture. The results of these operations are encouraging.

RESULT OF SURGERY IN THE AGED.

DR. J. P. TUTTLE, of New York, read this paper. Old people stand operations better than is generally supposed; Dr. Tuttle has operated on 133 patients over sixty years of age; the average age was sixty-nine. There were only three deaths, all following operations for hernia; two resulted from pneumonia and in the third case operation was performed by mistake on a patient with contracted kidney. Most of the operations were major ones; 38 of them were for hernias, 36 for hemorrhoids. Ether was used as an anesthetic in the majority of cases, chloroform was used in 13 cases and cocaine in 30 cases. Albumin in the urine is not a contraindication to operation unless there be fatty or epithelial casts. Celerity in operating is important; the mortality is less than three per cent.

DR. DAWBARN, of New York, believes that the greatest danger is from sepsis in such operations. Old people do not fight suppurative processes well.

DR. HART, of China, finds that a man of seventy-five in China is as old as a man of ninety-five in America. The lower classes of Chinese stand operations well, probably as a result of their simple methods of living; aristocrats do not bear operation well.

DR. TUTTLE, in closing, stated that he agreed with Dr. Dawbarn's suggestion that the old do not bear suppurative processes well; in his cases those which suppurated required a long time for recovery.

DR. C. VAN ZWALENBERG, of Riverside, Cal., read a paper entitled

SARCOMA OF THE INTESTINES.

Of 13,000 necropsies at the German University of Prague during fifteen years there were only 13 cases of sarcoma of the intestine, showing that the condition is relatively very rare. He reports a case in a boy of five, both of whose parents had died from carcinoma. There was a history of abdominal injury followed by declining health with no discernible cause but digestive symptoms. A rapidly growing tumor was soon felt in the abdomen; a grave prognosis was given, but exploratory operation was advised. On opening the abdomen two growths were found involving ileum and colon near the ileocecal valve; there was intussusception of three or four inches of intestine. The ascending colon, which was affected, and a part of the ileum were excised and end-to-end anastomosis by Murphy's button was performed; after twenty-four hours the patient's condition was good, and now six months later he is well and has gained seventeen pounds. A microscopic examination proved the growth a round-celled sarcoma. Dr. Zwalenberg has tabulated 15 cases, all he was able to find in literature. Of these cases of intestinal sarcoma, 10 affected the small intestine; nine patients were males and five females; the ages ranged from one and a half to fifty-one years; he finds that stenosis of the intestine, which is commonly reported as a symptom of the affection, is rarely present; on the contrary there is general dilatation; the diagnosis is difficult and resection is the only proper treatment.

THE ADVANTAGES OF RETAINED CATHETER.

DR. J. R. EASTMAN, of Indianapolis, Ind., finds retained catheter often the best method of dealing with cases of retention of urine, particularly if the urethra is sensitive. He advises using a large soft-rubber catheter, which is retained with remarkable tolerance. In one case of traumatic stricture of thirteen years' standing with urinary fistula the catheter was retained without disturbance; the fistula healed permanently in twelve days; in another case the catheter was retained seventeen days; in a third case of perineal fistula it was retained sixty-five days with occasional removal and cleansing. The dangers of cystitis from retained catheter have been much overestimated.

DR. E. W. HOLMES, of Philadelphia, agrees with Dr. Eastman as to the value of retained catheter. He reported a case of suprapubic cystotomy for the removal of vesical calculus in which a soft catheter was retained for twenty-one days.

DR. LORD, of Omaha, Neb., believes that the retained catheter is contraindicated in case infective processes are present.

DR. GUITERAS, of New York, always uses the retained catheter for a few days after external urethrotomy if the urethra is tortuous. He has used the catheter in such cases as long as two weeks. It may be used with advantage in case of spasmodic stricture, acute prostatitis, or seminal vesiculitis; it is also useful in cases in which the patient is being broken into catheter life if there is spasm of the urethra with resulting trauma on passing the catheter, but in these cases the catheter may be plugged until there is a feeling of distention of the bladder. He has also used retained catheter in severe febrile conditions.

DR. EASTMAN, in closing, noted that it is often easy to pass a large catheter in cases where it is impossible to pass a small one.

NEPHRO-URETEROCYSTECTOMY.

DR. HOWARD A. KELLY, of Baltimore, reports a case of tuberculosis of the left kidney, ureter and the adjacent portion of the bladder, in which he removed kidney, ureter and the diseased part of the bladder wall; the specimen was demonstrated. The operation was performed through two incisions; one in the loin, the other median. The patient made a good recovery from the operation, but from a mistake of a house physician in charge, the bladder became distended and ruptured, causing fatal peritonitis. Dr. Kelly believes that it is possible to do far more extensive operations for tuberculous processes than has been supposed; removal of the entire disease is essential.

DR. E. W. HOLMES, of Philadelphia, gave an abstract of a paper on the

ANATOMY OF HANGING,

which was reported in full to the Section on Neurology and Medical Jurisprudence.

DR. MCLEAN, of Detroit, expressed the belief that from a humanitarian standpoint we are not justified in executing fellow human beings, no matter what their crime may have been.

(To be continued.)

Recent Literature.

The Diseases of Children, Medical and Surgical. By HENRY ASHBY, M.D. (Lond.), F.R.C.P., Physician to the General Hospital for Sick Children, Manchester; Lecturer and Examiner in Diseases of Children in the Victoria University; Lecturer in Physiology in the Owens College and in the Liverpool School of Medicine, and G. A. WRIGHT, B.A. and M.B. (Oxon.), F.R.C.S. (Eng.), Assistant Surgeon to the Manchester Royal Infirmary, and Surgeon to the Children's Hospital; Lecturer on Practical Surgery in the Owens College. Fourth edition. Edited for American students by WILLIAM PERRY NORTHRUP, A.M., M.D., Professor of Pediatrics, the University and Bellevue Hospital Medical College; Attending Physician New York Foundling, William Parker and Presbyterian Hospitals. London and Bombay: Longmans, Green & Co. 1900.

This now deservedly well-known work on children has, in its fourth edition, added to its text about 60 pages; 25 new photographs and 14 plates have also been added. The surgical part of the work has been made still more attractive by a number of excellent skiagrams. It would seem that in the differential diagnosis of meningitis mention should at least be made of lumbar puncture, but we fail to find such mention anywhere. It would seem that the Widal reaction should deserve more than the very incomplete reference which is made to it. The American editor, Dr. William P. Northrup, has thought best to leave the body of the book intact, stating that the same disease differs but little in its course in America and England. He, therefore, notes such differences in theory and in treatment as would seem to bring the book into accord with the present American practice. He has done this by means of the appendix, carefully referring supplementary matter to its proper connection in the main work by page reference and by additions to the index. The formulæ on page 865 have been entirely rewritten to conform to the United States Pharmacopeia.

Our Baby. For Mothers and Nurses. By MRS. LANGTON HEWER, diplomeé Obstetrical Society, London; late hospital ward sister; author of "Antiseptics: a Hand-Book for Nurses." Sixth edition, revised. Bristol: John Wright & Co. London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd. 1899.

Although this book has been carefully written it might be one which would do a great deal of harm in the hands of an inexperienced person. Thus it is manifest that the treatment of diarrhea and vomiting should not be placed in the hands of a nurse or mother, nor should such drugs as calomel and bromide of potash be ordered by any one but a physician. These are only instances of what may be met with throughout the whole book.

FOREST SANATORIUMS FOR THE TUBERCULOUS. — According to the *Philadelphia Medical Journal*, the Commissioner of Forestry of Pennsylvania is in favor of throwing open to consumptives the forest lands owned by the State. They are the property of the people and were pledged to the maintenance of public health.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, JUNE 28, 1900.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.56 per year for all foreign countries belonging to the Postal Union.*

All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.

All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal should be addressed to the undersigned.

Remittances should be made by money-order, draft or registered letter, payable to

DAMRELL & UPHAM,
283 WASHINGTON STREET, BOSTON, MASS.

THE SCIENTIFIC PHYSICIAN.

THE development of medicine in America has been erratic in many respects, but in none more so than in the peculiar stress laid from time to time on certain phases of progress. Without entering into details regarding this sufficiently self-evident fact, it is clear that the present wave of enthusiasm is concerning itself with what is popularly known as "scientific research." This is due, no doubt, in great measure to natural and inevitable tendencies, and also to the influence of certain men of strong intellect and fixed convictions, who have consistently maintained that the laboratory side of medical science must be cultivated as a foundation for the whole superstructure of more or less empirical clinical facts. As we have repeatedly found occasion to say in these columns, this tendency, which is now definitely materialized in the form of innumerable laboratories, stands as the most important advance of the past few years. Upon its continuance and growth must depend the future of medicine as a science worthy of cultivation by intelligent men. This general proposition has been discussed at length by Dr. A. T. Cabot in his annual address before the Massachusetts Medical Society, recently published in this JOURNAL.

It is of interest to an unprejudiced onlooker to observe the effect of this zeal for accurate observation and experiment on the practice of medicine at large. In the first place, it has unquestionably tended toward the establishment of more systematic methods throughout the whole field of medical practice. Each and every man who now practises medicine is feeling the effects of the general movement, however far removed he may be from the centres of laboratory research, and however little he may himself have employed so-called laboratory methods. In the second place, and it is to this that we desire to call special attention, the laboratory, and particularly the use of the word "scientific" in a narrow sense as applied to laboratory work, has done much to arouse prejudice and establish false standards. By degrees there has grown up a distinction, which is now heard on every hand, be-

tween what is termed "scientific medicine," and "practical medicine," naturally with the implication that practical medicine as personified in the practitioner is not scientific. In other words "scientific" as popularly used in medical writing and discourse demands a laboratory and the accessories which a laboratory implies, whereas the man who is examining his patients from day to day in most painstaking and accurate fashion is looked upon perhaps as a faithful and conscientious practitioner, but not as a scientific investigator. So deeply has the laboratory impressed itself upon the uncritical thought of the time, that he who often aimlessly looks through a microscope, or with narrow vision describes a lesion, is placed upon a pedestal as a man of "scientific" tendencies, while his colleague who faithfully describes a symptom is denied any such distinction.

The reason for this anomalous state of affairs is certainly not far to seek. It lies in the fact that accuracy and hence knowledge have, in great measure, come by way of the laboratory. The insistence on the necessity of exact observation and description has certainly not had its origin with any one set of investigators in the general field of medicine. The laboratory worker deals with problems of the most complex sort, and on the other hand with facts which may be easily and accurately described. His claim to distinction as a scientific man does not, however, lie in his description of isolated facts, but wholly upon his attitude toward the problems, the solution of which depends upon the proper interpretation of those facts. Certainly nothing is simpler than to go into a laboratory and to describe at any length what one sees under a microscope. This is, however, not science, however often the results may masquerade as such, nor does the mere accomplishment of such work constitute a scientific man. But to go into a laboratory, to study facts laboriously, and then to appreciate clearly the meaning of those facts for the sum total of knowledge and to make generalizations therefrom is, properly speaking, "scientific." Men who do this are rare, whether within or without laboratories. When we turn to the great mass of empirical facts which constitute the body of what we speak of as clinical medicine we see why progress has been slow. Until the laboratory came to the rescue there was no adequate standard of classification; the facts themselves were extremely difficult of interpretation, and in consequence a certain superficiality of observation was developed, which is still the bane of much of the work on the observation of clinical phenomena. This the laboratory, with its peculiar methods, has certainly gone far to rectify, and the natural result has been that in the popular mind all that is accurate and "scientific" has come to be regarded as a product of laboratory methods. Hence has arisen the unfortunate distinction, which has at times created a certain amount of personal feeling between men equally earnest in the pursuit of truth, between "scientific" and "practical" medicine. Clearly the difficulty is one of words merely, arising from a too narrow conception of the significance of the term "scientific." The kind of facts with which we deal evidently has nothing to do with the definition. A cell, as seen under a microscope, is no more an object of scientific investigation than a cough or a chill. Whether we are properly to be called scientific or not depends wholly upon the methods of investigation we employ. What we need to do is to cultivate the scientific method whether our work lies in the laboratory or in the observation of the most commonplace diseases. If this be faithfully done we may be sure that the distinction now so often and so superficially made between the scientific and the practical physician will be laid at rest forever. The first definition of "scientific" as given in the Century Dictionary is: "Concerned with the acquisition of accurate and systematic knowledge of principles by observation and deduction: as *scientific* investigation." Evidently the laboratory can claim no exclusive privilege in the acquisition of knowledge by this means, however much it may have furthered the general principle involved.

In Dr. Wm. H. Welch's recent brief remarks at the annual dinner of the Massachusetts Medical Society, he laid stress upon the fact that the time had come when the same intellectual pleasure might be obtained from study at the bedside as from study in the laboratory, that the solidarity of the whole medical profession towards the one aim of the prevention and cure of disease was much to be desired, and that the present distinction between the scientific and practical physician was wholly false. It is certainly very much to be hoped that the superficial lines of demarcation which the progress of medicine in this country have temporarily rendered inevitable may in the near future be merged in a more reasonable conception which will clearly recognize the fact that the "scientific" physician is he who observes facts in a scientific manner, under whatever form those facts may be presented, and not he alone who observes a special series of facts in a special way. Unquestionably the next advance will be, as Dr. Welch suggested, a united body of men all working toward the same end by the same exact methods, whether the field of investigation be such as appeals to the laboratory worker or to the practitioner. The clinician will come to respect more and more the work of the laboratory, and the laboratory student will likewise come to see that the clinician is using precisely the same methods that he employs, and to similar ends. Petty antagonisms will then, no doubt, give place to an attitude of complete mutual helpfulness.

ADJUSTABLE FURNITURE FOR SCHOOLS.

IN our issue of June 21, we commented editorially on the recent agitation regarding improved furniture for Boston's schools. We at that time made the statement that the accomplishment of any far-reaching reform must rest with the school authorities. There has just come

into our hands an order, signed by the Secretary of the Boston School Committee, which reads: "Ordered, that hereafter all school furniture purchased for new permanent schoolhouses shall be adjustable." This evidently does not imply that desks and chairs now in use will be removed to make way for those of improved pattern, but it nevertheless meets the chief requirement that as the school system expands in the future new buildings will be properly equipped. This reform has been long in coming, but now that it has come it is not likely that it will fail of execution, and the medical profession may well take to itself a goodly share of the credit for its ultimate accomplishment.

MEDICAL NOTES.

Recent Deaths in Europe. — The following well-known physicians have recently died: George Edward Williamson, F.R.C.S. He had for many years devoted himself to ophthalmology, and was held in high esteem by his colleagues. Thomas Fitz-Patrick, M.D., M.A. (Dublin), M.D. (Cantab.), M.R.C.P. (Lond.). He practised medicine in London, and beyond his talent as a physician was a man of unusual general culture. Julius Althaus, M.D. (Berlin), M.R.C.P. (Lond.). Dr. Althaus was a voluminous writer, chiefly on electrical treatment and disorders of the nervous system. Dr. Heinrich Laudahn, director of the Lindenburg Asylum, Cologne. Dr. Leopold Grossmann, the *doyen* of Hungarian ophthalmologists, at the age of seventy-nine years. Dr. Korsakoff, professor of mental diseases in the University of Moscow.

Plague Laboratories in Germany. — The Government of Baden, it is stated by the *British Medical Journal* proposes to establish plague laboratories at Freiburg and Heidelberg for the diagnosis of any suspicious cases, and for the prosecution of researches as to the cause of the disease. The laboratories are to be in connection with the hygienic institutions of both the universities. The cost of each is estimated at 10,000 marks and the equipment at 8,000 marks.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, June 27, 1900, there were reported to the Board of Health of Boston, the following cases of acute infectious diseases: diphtheria 79, scarlatina 37, measles 63, typhoid fever 22.

Wm. H. Welch, M.D., LL.D. — The honorary degree of LL.D. was conferred upon Prof. William H. Welch, of the Johns Hopkins University, by Harvard University at its Annual Commencement, on June 27th. The degree was conferred by President Eliot with the following words: "William Henry Welch, professor of pathology in Johns Hopkins University, who holds first place in the medical profession of the United States as teacher, pathologist, and organizer of medical progress."

Appointment of Dr. Franklin Dexter. — Franklin Dexter, M.D., has been appointed associate professor of anatomy at Harvard Medical School.

NEW YORK.

Officers of the New York County Medical Association. — At the annual election of the New York County Medical Association, held June 18th, the following officers were elected: President, Dr. Parker Syms; First Vice-President, Dr. J. Riddle Goffe; Second Vice-President. Dr. Emil Mayer; Recording Secretary, Dr. Ogden C. Ludlow; Corresponding and Statistical Secretary, Dr. J. W. Draper Maury; Treasurer, Dr. Charles E. Denison; Member of the Executive Committee, Dr. F. H. Wiggin.

Reinstatement of Dr. Francis M. Banta. — Dr. Francis M. Banta has resumed duty as a medical officer of the Fire Department. Dr. Banta, who was appointed by the Republican Fire Board, in place of a physician appointed by the previous Democratic Board, was in turn removed by the present Fire Commissioner, Scannell. He applied to the courts, and the Supreme Court ordered his reinstatement. An appeal was taken, and the Appellate Division of the court affirmed the finding of the lower tribunal.

Christian Scientists as an Insurance Risk. — At Buffalo recently the Supreme Lodge of the Knights of Honor, one of the largest of the mutual benefit societies, which has branches in many parts of the country, decided after a full discussion that Christian Scientists and other faith curists, because of their rejection of the aid of medical science when ill, are the most dangerous of risks from an insurance standpoint, and that hereafter they shall not be admitted to membership in the order.

A Gift to the Presbyterian Hospital. — At the last meeting of the Board of Managers of the Presbyterian Hospital it was announced that a gift of $200,000 had been received from a donor who desired his name withheld, for the erection of a new building for the accommodation of the house staff and nurses. By this arrangement room will be made for one hundred additional beds in the present buildings, thus increasing the capacity of the hospital one-third.

Insanity and Murder. — Mrs. Grace Ramsey, who murdered her husband by cutting his throat while he was asleep in bed a year ago, and who was acquitted on the ground of insanity and sent to the State Hospital for Insane Criminals at Matteawan, has now been declared sane and set at liberty. Her insanity was regarded as being due to pregnancy, and during her confinement in the hospital she gave birth to a child.

Alumni Association of St. Vincent's Hospital. — The Alumni Association of St. Vincent's Hospital was organized on June 18th. The officers chosen were: President, Dr. Charles H. Lewis; Vice-President, Dr. Charles L. Weeks; Secretary, Dr. Joseph A. Dillon.

Obituary.

BENJAMIN DOUGLAS HOWARD, M.D.

DR. BENJAMIN DOUGLAS HOWARD died at the summer residence of Dr. Andrew H. Smith, at Elberon, N. J., on June 21st, at the age of sixty-three. He was born in England, and was graduated from the College of Physicians and Surgeons, New York, in 1858. He served with distinction in the Medical Department of the United States Army during a considerable portion of the Civil War, and was especially identified with the antiseptic treatment of gunshot wounds of the chest by hermetical sealing. He also invented an army ambulance wagon which was awarded the first prize at the Paris International Exposition. After studying for some time abroad he returned to New York to practise, and was appointed professor of operative surgery in the Medical Department of the University of the City of New York. At various times he also held the position of professor of surgery in the Long Island College Hospital, the University of Vermont, and the Medical College at Cincinnati. He was also a Fellow of the Royal College of Surgeons, London. The last years of his life were spent in prison investigation. Drs. Andrew H. Smith and D. B. St. John Roosa are his literary executors.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JUNE 16, 1900.

CITIES	Estimated population.	Reported deaths in each.	Deaths under five years.	Percentage of deaths from				
				Infectious diseases.	Acute lung diseases.	Diarrheal diseases.	Diphtheria and croup.	Measles.
New York	3,654,594	1193	432	26 48	13.60	4.56	3.84	1.36
Chicago	1,619,226	—	—	—	—	—	—	—
Philadelphia	1,266,832	—	—	—	—	—	—	—
St. Louis	623,000	—	—	—	—	—	—	—
Boston	539,416	178	56	25.83	17.60	4.40	4.95	1.65
Baltimore	506,389	169	41	17.70	10.62	4.13	.59	—
Cincinnati	405,000	—	—	—	—	—	—	—
Cleveland	350,000	—	—	—	—	—	—	—
Pittsburg	305,000	102	50	27.90	5 40	9.60	—	6.30
Washington	277,000	121	59	25.73	7.47	12.45	2.49	1.66
Milwaukee	275,000	—	—	—	—	—	—	—
Providence	150,000	53	0	22.00	16.00	2.00	—	—
Nashville	81,754	—	—	—	—	—	—	—
Charleston	65,165	37	11	27.00	—	5.40	—	—
Worcester	111,732	23	15	39.15	30.45	—	—	—
Fall River	103,142	33	13	3 1.30	9.09	12.12	—	—
Cambridge	92,520	17	5	47.04	11.76	—	—	11.76
Lowell	90,114	24	8	24.96	4.16	8.32	—	—
New Bedford	70,511	19	6	5.26	5.26	—	—	—
Lynn	68 218	19	4	18.78	10.52	—	—	5.26
Somerville	64,394	17	4	17.64	17.64	—	—	—
Lawrence	59,072	16	7	31.25	18.75	—	6.25	—
Springfield	58,266	15	7	13 33	13.33	—	—	6.66
Holyoke	44,510	9	6	33.33	11.11	22 22	—	—
Brockton	38,759	1	1	—	—	—	—	—
Salem	37,723	14	8	28.56	7.14	7.14	7.14	—
Malden	36,421	6	2	16.66	33.33	—	16.66	—
Chelsea	34,235	10	1	—	—	—	—	—
Haverhill	32,651	7	—	—	14.28	—	—	—
Gloucester	31,426	10	2	40.00	—	—	10.00	—
Fitchburg	30,523	7	1	14.28	—	—	—	—
Newton	30,461	5	1	20.00	—	—	20.00	—
Taunton	28,527	9	1	—	11.11	—	—	—
Everett	28,102	5	2	—	—	—	—	—
Quincy	24,578	—	—	—	—	—	—	—
Pittsfield	23,421	—	—	—	—	—	—	—
Waltham	22,791	5	1	40.00	—	20.00	—	—
North Adams	21,583	5	2	—	20.00	—	—	—
Chicopee	18,316	7	3	14.28	—	14.28	—	—
Medford	17,190	3	1	—	—	—	—	—
Newburyport	15,936	6	2	—	16.66	—	—	—
Melrose	14,721	3	2	—	33.33	—	—	—

Deaths reported 2,160; under five years of age 749; principal infectious diseases (small-pox, measles, diphtheria and croup, cerebrospinal meningitis, diarrheal diseases, whooping-cough, erysipelas, fevers and consumption) 562, acute lung diseases 329, consumption 262, diarrheal diseases 112, diphtheria and croup 78, measles 32, typhoid fever 24, whooping-cough 21, scarlet fever 14, cerebrospinal meningitis 10, erysipelas 8.

Typhoid fever New York 12, Boston, Baltimore, Pittsburg, Providence and Charleston 2 each, Fall River and Lawrence 1 each. From whooping-cough New York 10, Boston 4, Lynn 3, Washington 2, Pittsburg and Fall River 1 each. From scarlet fever New York 9, Boston and Salem 2 each, Worcester 1. From cerebrospinal meningitis New York 4, Worcester 3, Baltimore, Lynn and Gloucester 1 each. From erysipelas New York 7, Boston 1.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending June 2d, the death-rate was 17.7. Deaths reported 3,951; acute diseases of the respiratory organs (London) 266, measles 142, whooping-cough 115, diphtheria 77, diarrhea 34, scarlet fever 29, fever 26.

The death-rates ranged from 11.0 in Gateshead to 25.5 in Plymouth: Birmingham 19.3, Bradford 18.4, Cardiff 15.6, Hull 14.6, Leeds 19.1, Liverpool 21.4, London 17.0, Manchester 21.5, Newcastle-on-Tyne 17.6, Nottingham 15.3, Portsmouth 14.2, Salford 21.0, Sheffield 21.7, Sunderland 18.0, West Ham 15.4.

In the thirty-three greater towns of England and Wales, with an estimated population of 11,610,296, for the week ending June 9th, the death-rate was 16.8. Deaths reported 3,748; acute diseases of the respiratory organs (London) 268, measles 128, whooping-cough 111, diphtheria 65, scarlet fever 30, diarrhea 27, fever 24, small-pox (Oldham) 1.

The death-rates ranged from 8.0 in Birkenhead to 24.8 in Liverpool: Bradford 15.9, Cardiff 15.0, Gateshead 15.3, Huddersfield 17.5, Leeds 18.0, London 15.9, Manchester 23.1, Newcastle-on-Tyne 17.8, Nottingham 18.3, Portsmouth 13.4, Sheffield 19.9, Swansea 11.4, West Ham 14.1.

METEOROLOGICAL RECORD

For the week ending June 16th, in Boston, according to observations furnished by Sergeant J. W. Smith, of the United States Signal Corps: —

Date.	Barometer	Thermometer.			Relative humidity.			Direction of wind.		Velocity of wind.		Weather. *		Rainfall in inches.
	Daily mean.	Daily mean.	Maximum.	Minimum.	8.00 A. M.	8.00 P. M.	Daily mean.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	8.00 A. M.	8.00 P. M.	
S...10	30.18	63	70	56	79	45	62	N.E.	S.	10	9	C	C.	
M..11	29.96	68	84	53	74	71	72	S.W.	S.W.	12	11	C.	O.	
T...12	30.09	72	78	65	75	50	62	N.W.	S.E.	11	4	F.	O.	
W..13	30.21	62	68	57	72	69	70	E.	S.E.	5	×	C.	C.	
T...14	30.00	66	75	56	87	83	85	S.W.	W.	7	10	O.	O.	.07
F...15	30.01	70	79	62	65	34	49	N.W.	N.	14	10	F.	C.	
S...16	29.96	70	83	57	57	39	48	W.	W.	6	4	C.	O.	

* O, cloudy; C, clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. ‡ Mean for week.

APPOINTMENTS.

The following appointments in the Tufts College Medical School have been made by the Trustees: JOHN L. HILDRETH, M.D., LL.D., professor of clinical medicine, emeritus; HORACE D. ARNOLD, A.B., M.D., professor of clinical medicine; GEORGE VAN NESS DEARBORN, A.B., Ph.D., M.D., assistant professor of physiology; HOWARD S. DEARING, A.M., M.D., assistant professor of clinical medicine; HERBERT WARREN WHITE, M.D., assistant professor of theory and practice of medicine; E. CHANNING STOWELL, A.B., M.D., assistant professor of children's diseases; GEORGE W. KAAN, M.D., assistant professor of clinical gynecology.

RECENT DEATH.

WILLIAM FRANCIS HOWARD, M.D., M.M.S.S., died in Lawrence, June 15, 1900, aged thirty-one years.

BOOKS AND PAMPHLETS RECEIVED.

Catalogue of the Medical and Dental Departments of the National University, Washington, D. C., for 1900-1901.

Suggestions to Medical Writers. By George M. Gould, A.M., M.D. Philadelphia: Philadelphia Medical Publishing Co. 1900.

The Duty of State and Municipality in the Care of Pulmonary Tuberculosis Among the Poor. By Edward O. Otis, M.D., Boston, Mass. Reprint. 1900.

Food for the Sick and How to Prepare It, with a chapter on Food for the Baby. By Edwin Charles French, M.D. Louisville: John P. Morton & Co. 1900.